Birds Mammals

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Photo by Herbert W. Gleason.

John Andrew & Son

TUOLUMNE MEADOWS, FROM LAMBERT'S DOME.

YOSEMITE NATIONAL PARK.

YOSEMITE NATIONAL PARK.

SIERRA CLUB BULLETIN

VOL. VIII. SAN FRANCISCO, JANUARY, 1911 No. 1

CATHEDRAL PEAK AND THE TUOLUMNE MEADOWS.*

BY JOHN MUIR.

August 9, 1869.—I went ahead of the flock and crossed over the divide between the Merced and Tuolumne basins. . . . From the top of the divide and also from the Big Tuolumne Meadows the wonderful mountain called Cathedral Peak is in sight. It is a majestic temple of one stone, hewn from the living rock, and adorned with spires and pinnacles in regular cathedral style. I hope some time to climb to it to say my prayers and hear the stone sermons.

The Big Tuolumne Meadows are flowery lawns, lying along the South Fork of the Tuolumne River at a height of about 8500 to 9000 feet above the sea, partially separated by forests and bars of glaciated granite. Here the mountains seem to have been cleared away or set back so that wide open views may be had in every direction. The upper end of the series lies at the base of Mt. Lyell, the lower below the east end of the Hoffman Range, so the length must be about ten or twelve miles. They vary in width from a quarter of a mile to perhaps three quarters, and a good many branch meadows put out along the banks of the tributary streams. This is the most spacious and delightful high pleasure ground I have yet seen. The air is keen and bracing, yet warm during the day, and though lying high in the sky the surrounding mountains are so much higher one feels protected as if in a grand hall. Mts. Dana and Gibbs, massive red mountains perhaps 13,000 feet high or more, bound the view on the east, the Cathedral and Unicorn peaks with many nameless peaks on the south, the Hoffman Range on the

*From Mr. Muir's journal, "My First Summer in the Sierra," to be published in the spring of 1911 by Houghton-Mifflin Company, Boston, with illustrations from original drawings by the author and photographs by Herbert W. Gleason. Portions of the journal will appear in the *Atlantic Monthly*, beginning with the January number.

west, and a number of peaks unnamed, as far as I know, on the north. One of these is much like the Cathedral. The grass of the meadows is mostly fine and silky, with exceedingly slender leaves, making a close sod above which the panicles of minute purple flowers seem to float in airy, misty lightness, while the sod is enriched with at least three species of gentian and as many or more of orthocarpus, potentilla, ivesia, solidago, pentstemon, with their gay colors,—purple, blue, yellow and red—all of which I may know better ere long. . . .

August 14th.—On the way back to our Tuolumne camp enjoyed the scenery if possible more than when it first came to view. Every feature already seems familiar as if I had lived here always. I never weary gazing at the wonderful Cathedral. It has more individual character than any other rock or mountain I ever saw, excepting perhaps the Yosemite South Dome. The forests, too, seem kindly familiar, and the lakes and meadows and glad singing streams. I should like to dwell with them forever. Here with bread and water I should be content. Even if not allowed to roam and climb, tethered to a stake or tree in some meadow or grove, I should be content forever. Bathed in such beauty, watching the expressions ever varying on the faces of the mountains, watching the stars, which here have a glory that the lowlander never dreams of, watching the circling seasons, listening to the songs of the waters and winds and birds, would be endless pleasure. And what glorious cloud-lands I would see, storms and calms, a new heaven and a new earth every day,—aye, and new inhabitants! And how many visitors I would have! I feel sure I would not have one dull moment. And why should this appear extravagant? It is only common sense, a sign of health,—genuine, natural, all-awake health. One would be at an endless Godful play, and what speeches and music and acting and scenery and lights,—sun, moon, stars, auroras! Creation just beginning, the morning stars "still singing together and all the sons of God shouting for joy!"

LITTLE STUDIES IN THE YOSEMITE VALLEY.

By Francois E. Matthes.

II. The Striped Rock Floor of the Little Yosemite Valley.*

About a stone's throw from where the Clouds Rest Trail leaves the flat of the Little Yosemite Valley, there is a curious expanse of smooth, bare granite, an acre or more in extent. It is a part of the solid rock floor of the valley, which, buried under river gravel and glacial material elsewhere, is here exposed to view, cleared of all debris. Indeed, so scrupulously clean swept does it look, one might fancy some cyclopian broom had been at work on it—and a new one at that.

Round about, in all directions lie glacial boulders, some singly, some in clusters, some in heaps mixed with fine debris. Sparse pines and cedars rise from what few cracks the stone floor affords as a root-hold, giving the place a singularly genial, parklike aspect. But the cleared tract itself has not a tree on it—its surface stretches unbroken and continuous, unmarred by a single fissure.

As one approaches from the lower end and looks up the gentle slope—for the floor inclines appreciably—the eye is almost at once held by the peculiar "painted" appearance of the space. Irregular, blotchy white ribbons set off conspicuously against the prevailingly gray tint of the rock floor, sprawl over it here and there. Wholly unlike the dark water stains that stripe most of the Yosemite cliffs, they seem, even to one thoroughly familiar with the various markings common to the rock surfaces of the region, altogether novel and enigmatic. All trend downward with the slope, but beyond this there seems no discoverable

* Published by permission of the Director of the U. S. Geological Survey.

law in their arrangement, nor anything else immediately suggestive of their mode of origin. The majority occur in loosely connected groups, but some lie off by themselves, like pale islands in a dark ocean. As the view in Fig. 1 well shows, they generally commence abruptly and terminate abruptly, without definite relation to the unevennesses of the floor itself. Some divide, others merge downward; some gain in width, others taper down toward their lower ends.

In dimensions they are equally varied. While they average between four and five feet in length and from two to three inches in breadth, there are individuals among them but a fraction of a foot long and others exceeding twelve or even fifteen feet; and some are less than an inch across, while others—like those in the immediate foreground of the view—span six inches and over. Nor is the breadth always proportionate to the length. Some of the longest are very narrow, some of the shortest very broad.

On closer inspection they are seen to consist simply of narrow tracts from which the lichens that otherwise uniformly mottle the rock have been removed, and it becomes plain that it is merely the light color of the unweathered granite thus exposed that makes them prominent. These stripes, then, are not stains at all; rather, they owe their brilliancy to their very stainlessness—to the absence of coloring matter of any sort.

By what agent the lichens were cleared off, however, seems at first a mystery. That it was some substance that moved downhill under the influence of gravity is patent from the invariable downhill trend of all the stripes, but what the nature of that substance was, is not easily guessed. One feels tempted to believe it was some corrosive fluid that was poured out upon the rock and flowed down slowly, eating away the lichens as it went. There are places in the Yosemite Valley where such a thing has actually hap-

pened, so the theory is not so utterly absurd as at first blush it may seem. On the road to Mirror Lake, for instance, there is a great block of granite on the flat side of which some enterprising individual once painted him an advertisement in bold, glaring type. The true history of the affair may be better known to some of the readers of this journal than to the writer, but he gathers from a casual look that the "ad" was subsequently effaced by a zealous guardian. Whatever material the latter employed to remove the paint, removed the lichens too, running down in vertical, blotchy stripes remarkably similar to those on the Little Yosemite floor. Again, at the site of the "Old Blacksmith Shop," near the foot of the Coulterville Road, a space has been cleared on a huge rock by means of some caustic, and the same streaky effect has been produced.

But the stripes in the Little Yosemite Valley clearly were not the work of marring man. Besides, the same sort of markings exist in many other places in the Yosemite region, in seldom frequented spots too, as a rule. It was on such a spot, in fact—on the north slope of Liberty Cap—that the writer first found a clue to their mode of origin. A small rock fragment, derived from a disintegrating shell of the great rock hump, had evidently slid here several feet from its place of starting, and, extending from it, pointing up the slope, was a little white path cleared of lichens. Not far away were other fragments each likewise leaving a flaming trail. The width of the stripe produced corresponded in each case to the dimensions of the fragment. A tiny bit of granite, no larger than a thimble, lay at the end of a delicate white ribbon, and an uptorn tree stump had made a dozen markings, one with each of its dragging root tips and a broad swath with its heavy broken end. Surely, here was the key to the enigma! Here were the stripes in process of being made.

What, however, impelled the rocks and the tree stump downward? None of them appeared in motion, and none when dislodged, would slip or roll. The slope was not steep enough for that. Observation further showed that no stripes ever occur on very steep slopes—they are restricted to surfaces of moderate inclination such as the crowning portions of the domes, and wherever the declivity approaches the "angle of repose" the stripes invariably come to an end. A pretty and striking instance was seen on a small domed spur in the Little Yosemite Valley. Here the stripes, diverging downward like meridians on a globe, all terminated abruptly as by concert at the same level, the same parallel of latitude. Below that line, evidently, the debris had slid or rolled away. The inclination here, it should be noted, was too great to stand on safely, but farther up, among the stripes, one could walk even with hobnails by exercising a little care.

It is to be inferred from the above that a slow motion of the debris is essential for the production of the stripes. The explanation is here offered that the debris is urged down little by little by snow and running water and even the rockgrains washing from above, in fact by all agents co-operating with gravity to overcome the frictional resistance of the floor. Most potent, no doubt, are the heavy snows of winter, and there is good reason to believe that the greatest progress is made under their influence. For, on inclined surfaces of this sort, snow does not lie wholly inert, but almost imperceptibly creeps downward—the same as it does on the roofs of barns and sheds. As the entire layer advances, it naturally tends to drag the debris with it.

The total progress thus effected may not exceed an inch or two per year, and this estimate, if it is at all correct, lends additional significance to the stripes: they indicate not merely the route traveled over by

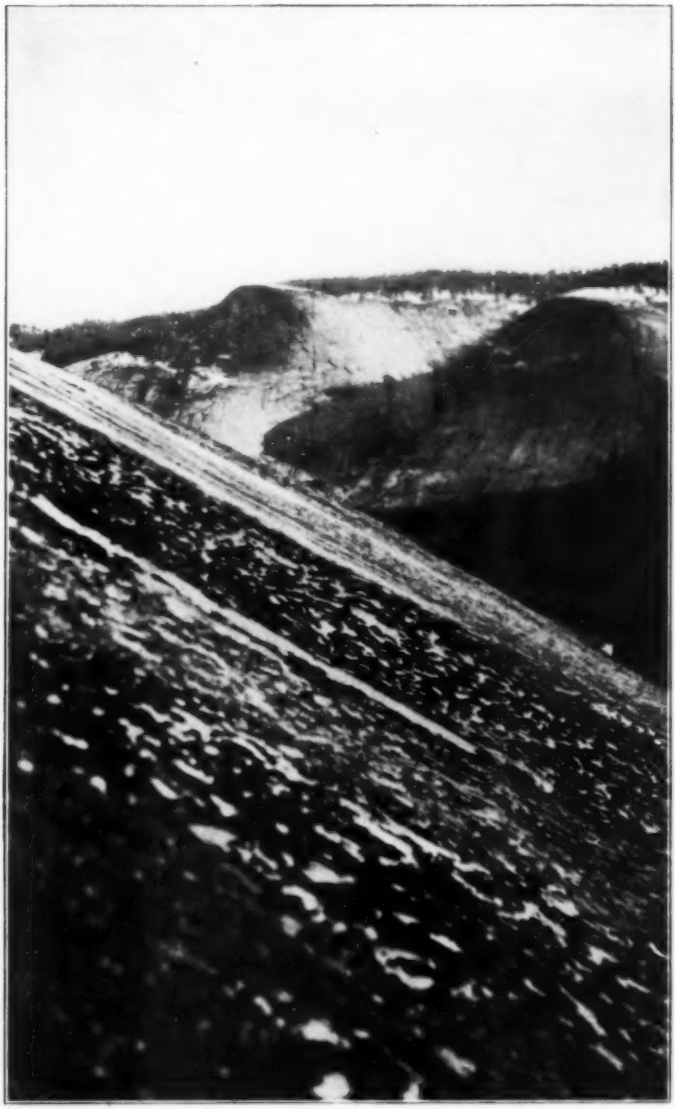


FIG. 2. YOSEMITE VALLEY STUDIES.

FIG. 1. YOSEMITE VALLEY STUDIES.

FIG. 3. YOSEMITE VALLEY STUDIES.

each fragment, they also embody a time record of the journey. Some of them represent a lapse of many years, the more impressive when it is reflected that during all that time no being, human or other, happened by in this solitude to interfere with the orderly continuance of the process.

The above explantion, however, accounts only for the movement of the debris. It does not yet make clear the production of the stripes themselves. That a heavy boulder might grind off the lichens from the bed it passes over seems quite natural, but that a bit of rock weighing an ounce or two should clear a path does not seem at all self-evident. The weight of the fragment, if it is a factor in the process, apparently plays but a minor role.

On picking up one of these traveling fragments, one finds it invariably imbedded in a small pad of loose rock grains that have collected under it. Now lichens cannot thrive under the thinnest veneer of sand or soil, as may be observed in a thousand places throughout the Sierra. Slanting rocks uncovered by the grading of a wagon road, for instance, show plainly by the boundary of their lichen growth where the surface of the ground used to be. Shallow basins in a rock floor or on large boulders that tend to accumulate sand, pine needles, and other litter, similarly remain white and bare of lichens. It is safe to say, therefore, that it is the sand pad under the fragments rather than the fragments themselves that clears the lichens from the stripes. And here, again, is substantiation of the view expressed regarding the slowness of the process. For, were the movement at all rapid, the lichens in any one spot would not remain covered for a sufficient length of time to utterly die and loose their hold. As a matter of fact there are places where they were not entirely stamped out and the stripes appear dim or interrupted. The debris must have advanced here with more than usual rapidity, owing to some local acceler-

ation of the gradient, or perhaps through the pressure of an exceptionally heavy snow fall.

To come back now to the floor of the Little Yosemite Valley equipped with this insight into the stripe-producing process, let us look it over somewhat more closely. The feature that strikes us as most puzzling is the total absence of debris of any kind. Whatever material once traveled over the floor has in some manner disappeared. But not wholly, for here, near the east edge of the tract, lies a boulder weighing some twelve or fifteen pounds (see Fig. 3) at the end of a long and glorious stripe. More than twenty feet it stretches, gradually fading in the distance like the smoke trail of a locomotive. A finer example would be difficult to find. The upward dimming of the stripe is in itself significant: so excessively slow has the progress of the boulder been that the lichens are already beginning to encroach again on the upper end, slow-growing plants though they be. When it is considered that rocks uncovered by road grading a score of years ago show scarcely any new lichens to-day, the great span of time represented by this stripe becomes doubly impressive. Its upper end, indeed, may date back to the time the Yosemite Valley was discovered.

But this stripe, after all, differs somewhat from the others on the floor. The rank and file are shorter and narrower; many split or fork irregularly, and all have ceased to grow in length through the removal of the debris that made them. Yet that material did not roll away, for the floor maintains about the same grade throughout and many stripes begin in the same latitude where others end. How, then, are these traits to be interpreted?

In the first place it seems certain that the material in question consisted of small, light fragments that were easily disturbed and thrown from their path by the feet of passing men or animals. That this must have happened more than once seems likely in view of

the fact that the Little Yosemite is much frequented and in former days was inhabited by Indians, as the round holes in which they ground their acorns, near by, amply attest.

Again, the assumption seems legitimate that the fragments were in an advanced state of disintegration, and broke down and crumbled on the way. Much of the debris that litters the valley floor to-day is in just such a crumbly state. It has lain exposed so long to strong diurnal and seasonal temperature changes that the individual crystals in the granite, each expanding and contracting with a coefficient of expansion peculiar to the mineral composing it—feldspar, quartz, mica or hornblende,—have gradually worked loose and are ready to part company. Those readers who have mountaineered in the Sierras may have had the experience of picking up a rock that would break in the hand and run like sand through the fingers. This suggests an explanation for the forking of the stripes. A decomposing fragment, after having advanced some distance, would break in two. From then on there would be a double trail. Later, each of the pieces would divide, and the trail would split again. Some fragments broke down by degrees into an aggregate of half-loose crystals, and their trails widened out progressively. The end in each case came no doubt, when there was nothing left but a little heap of rock grains which the melting waters of springtime carried off with a rush.

There are several other features of the striped rock floor of the Little Yosemite Valley that demand elucidation, and it is the writer's hope that this article may cause them to receive attention during the excursion planned for the coming summer.

THE KINGS RIVER OUTING OF 1910.

By R. L. Glisan.

The Yosemite National Park Outing of 1909 proved so interesting and enjoyable that I was anxious to visit the Kings River region to the south, and thus secure the cream of the Sierra scenery.

On the afternoon of Wednesday, June 30, 1910, the San Francisco party took Pullman sleepers for Lemon Cove, the end of rail communication. The train came to a most impressive stop some time after midnight, and half awake, tumbling into tramping costume, we ventured out where dim figures lurking in deep shadows suggested a possible holdup.

A familiar voice from the gloom directed my attention to a four-horse stage and, as I scrambled up, the impatient horses plunged forward. It was a weird ride as we drove through the night in the direction of the Star in the East, groves and fields were barely distinguishable as we passed, and soon we took the grade winding up the cool cañon, the horses straining at the collar as though they knew what was in store for them if once the sun came out with its relentless rays. Before the day was over we realized the wisdom of an early start. A few clever suggestions as to short cuts from the driver, emphasized by the pathetic condition of the steeds, persuaded many to walk ahead, and before noon we reached Juanita Ranch, at the head of a small valley, where, fanned by a delightful breeze under wide-spreading oaks, we watched the stages come toiling in. This was the largest invading army the natives had ever seen, with more to follow, for the Los Angeles contingent were held back for several days, the stages and pack-trains being inadequate to take care of all at once.

LOOKING DOWN RAE LAKE, 1910.
Photograph by E. T. Parsons.

FLOWERY GLADES ON BUBBS CREEK TRAIL, 1910.
Photograph by M. V. Tenney.

After a refreshing wash and lunch, we again attempted the grade through the scattering oaks and on up until we approached a few giant sentinels and entered a grove of massive sequoia, interspersed further on with lofty sugar pine. No fenced-in tree trunks bearing borrowed names and placards grossly advertising their size, but a forest of giants primeval, secluded and undisturbed. It was a fitting close for the long day as we silently passed through the forest, awed by their massive splendor, thrown into sharp relief by the sweeping glance of the slowly receding sun.

Towards evening we reached Quail Flat, where the mountain ridge thrusts its shoulder out of the forest some 7,000 feet above the sea. The crisp air made us scan with more than idle curiosity the heap of accumulated dunnage bags in search of familiar initials. Our sleeping-bags unrolled, the evening meal and fire drew us like a magnet, many envious glances being cast at the wholesome array sacrificed to appease a mountain appetite, and hardly offered before it vanished like magic in our midst.

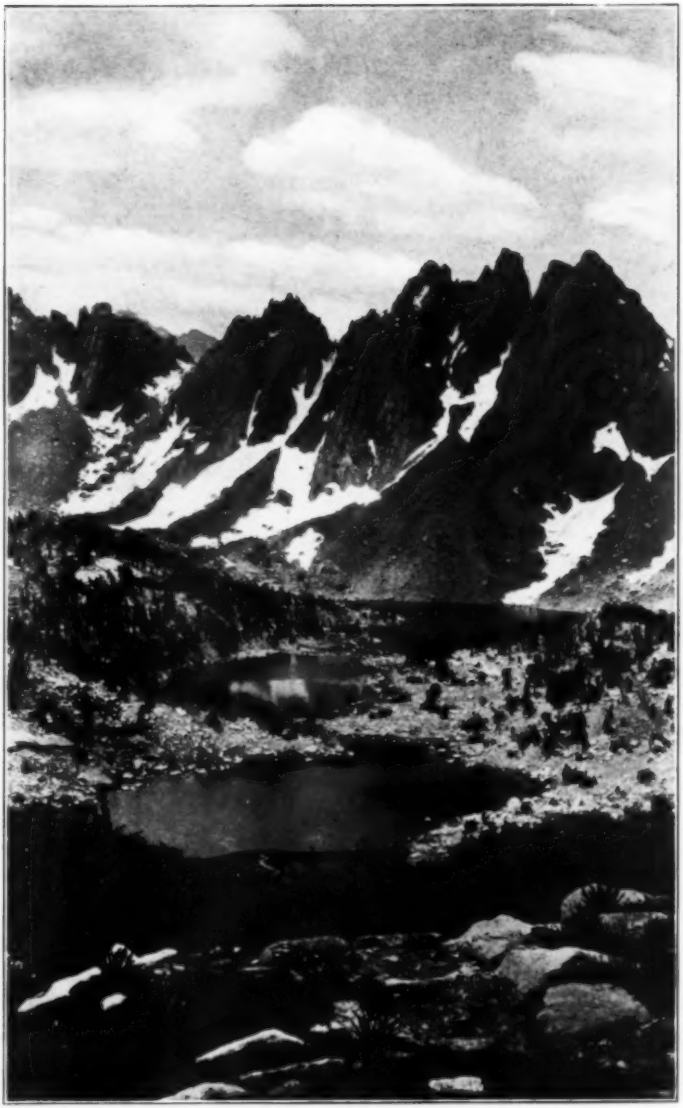
We slept a dreamless sleep—save those who lay in the way of our foraging, long-eared, four-footed comrades, who made the owner of one Merry Widow straw hat sleepless for fear it would be included in their bill of fare. Perhaps it was, for the hat, unlike the Bostonian's white collar, was never seen again. We awakened as dawn appeared to blaze the trail to the eastward. With fear and trepidation we dragged our bags down to the scales of justice with that dread experienced by some at the approach of the census taker, lest the fact develop that they are on the shady side of forty. The question of the hour was not "How old was Ann?" but "Are you over forty?" Insult a Sierra maiden with such a question and she would laughingly confess to being over forty the day before, but now hardly thirty-eight, and unless too much stress be placed on the rejuvenating atmosphere, would add that a hero had volunteered to carry a box of candy

or cookies on a prospective percentage basis of compensation. For let it be known that such edibles are never wilfully forsaken, however drastic the hard-hearted committee may be on weight limitation.

Leaving Quail Flat armed with maps and detailed instructions as to the route, we were soon strung along the trail in small groups. Woodcock and Rabbit meadows, small mountain glades in the timber were passed, then across Big Meadows, along Meadow Creek into the forest again, and down to Boulder Creek for lunch and a refreshing bath in the clear willow-fringed pools. In fact, hardly a day passed during the Outing without favorable opportunity and most attractive places in which to bathe or swim to one's heart's content, certainly one of the most grateful features of a most enjoyable trip.

From Boulder Creek the trail zigzagged up the opposite cañon slope more than 1,000 feet, winding through pungent bear clover, under red fir and tamarack pine, and mid-afternoon found us at Horse Corral, camp being established on the edge of the meadow near the stream in a cluster of Jeffrey pines. We were considerably higher than Quail Flat and the night proved the coolest experienced on the trip. The temperature dropped to freezing and the stream in the early morning made one fairly ache in bathing.

An early start soon brought us to Summit Meadows, where we climbed Lookout Peak and had a comprehensive view of Kings River 4,000 feet below, with the cañon in a bluish haze, merging into the mountainous region beyond. Going down we followed the old trail through a grove of sugar-pine to the river, crossed on a narrow bridge and went leisurely up-stream, selecting a place for lunch on the bank close to the rushing water. Several hours later we reached the place selected for the main camp at the base of the Grand Sentinel, near the junction of Copper Creek with Kings River, in a grove of large yellow pine. Kanawyer, our head packer, had his cabin, store and post-office combined on the other side



KEARSARGE LAKES AND PINNACLES, 1910.
Photograph by Edward Gray.

EAST VIDETTE AND FALLS FROM SIERRA CLUB CAMP, 1910.
Photograph by H. E. Bailey.

of Copper Creek, the only inhabitant of the Kings River region. Fishing and walks to Roaring River Falls and other places were the special attractions for several days. To reach the falls we crossed Kings River near camp on a log left conveniently wedged in place by the winter freshet, and picked our way over a talus of huge granite blocks, squared and ready for the corner-stones of great cathedrals; traveled through groves of yellow and sugar-pines, one stately sugar-pine measuring twenty-five feet in circumference; crossed an open meadow affording a comprehensive view either way of the cañon walls in the shifting shadows and the Grand Sentinel towering above; and keeping close again to the roaring water, we passed through scattering pines to the place where Roaring River leaps out of a gap in the cañon wall and drops into a rocky basin below with a roar that is a credit to its name.

The day after the Los Angeles party arrived, making the total number in camp nearly one hundred and eighty, the main camp was deserted by all save the less strenuous. We took the trail up Kings River to Bubbs Creek and up the creek, stopping for lunch at the head of the falls, where we had an unobstructed view down the cañon and beyond. For this beautiful stream to be branded with such a name is surely a crime. Let us hope it is only an abbreviated name for the snowy bubbles it makes in its reckless plunge from Center Basin to the Kings Cañon. Our camp, at an elevation of 9,500 feet, was admirably placed in a bewildering array of Nature's masterpieces. We were near the willow-fringed stream in a grove of tamarack and white-bark pine at the base of the East Vidette, a prominent peak which caught the evening light at times with such a vivid hue it seemed fairly ablaze. Opposite the Videttes the Kearsarge Pinnacles cut the sky with fantastic spires and jagged shapes. Falls were below us and a fall above us, and what a fall it was!

Next morning found us on our way to Bullfrog Lake on the bench above. The lake's chief claim is its massive

setting. Rixford and Gould, ascended by some of the party, rise from the further side, while near by the Kearsarge Pinnacles form a giant stairway to University Peak beyond.

Impatient and less clever than our leader, failing to land trout at Bullfrog, we kept on to Charlotte Lake, equally attractive, and soon had a fair string of trout, a threatening thunder-storm warning us against further delay.

Early the day following a fair-sized company left camp and two hours' walk brought us to Center Basin, where Center Peak apparently rises out of a perfect amphitheater, and after several hours' stiff climbing the summit of University Peak was made, 13,588 feet elevation. An hour slipped by as we revelled in the view, a most attractive combination of mountain and desert. On the plains below we saw a narrow thread, where the life-giving fluid would soon start on its long journey to supply Los Angeles's thirst. The elements were in a fitful mood. Over the mountains in front driving sheets of rain came down from the leaden sky; clouds pouring through the gap were laden with snow, and surrounded by snow we were pelted now and then by hail-stones, while the lakes below looked like silver sheen or inky cauldrons, as the struggling sun would strike or miss them.

Descending, we followed the Kearsarge Pinnacles, rewarded by a glorious slide down a lengthy snow slope, and then by the Kearsarge lakes down to Bullfrog and home again, for where our sleeping-bags lie is home.

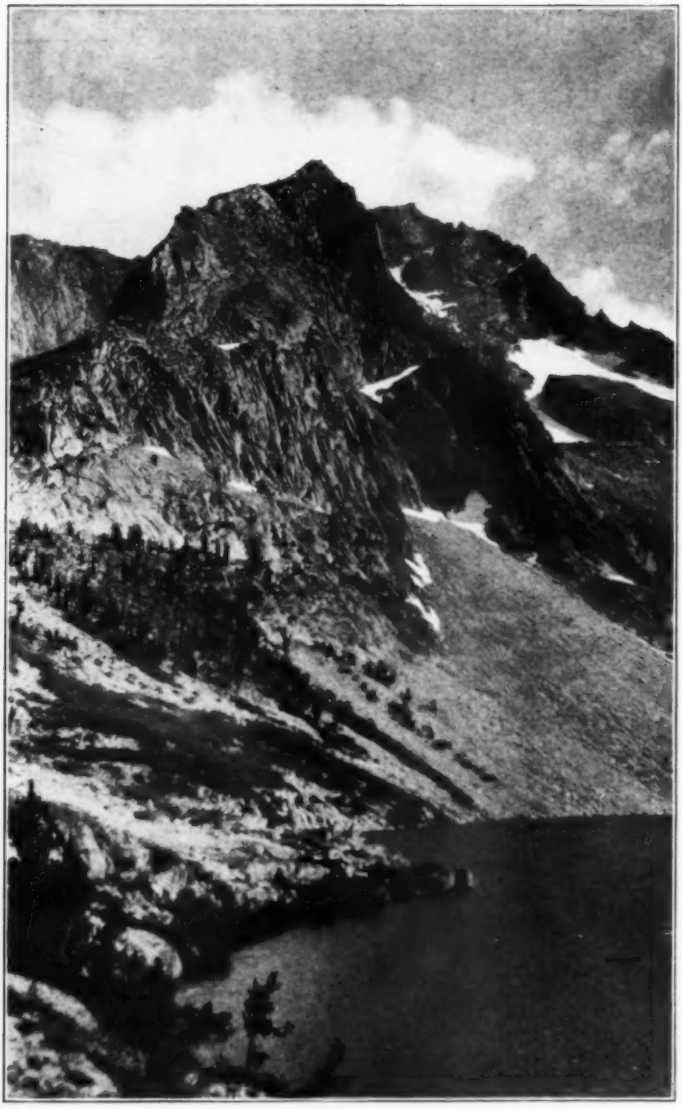
The trip to the Vidette lakes made another day to linger in one's memory.

Following up the small creek through scattered foxtail pine, whose reddish bark with dark polished limbs of orange tint offered striking contrast with the green foliage and rocks of quiet shades of gray. A chain of lakes was passed, one above the other, until we climbed into the upper basin at the base of Deerhorn Mountain. Here we allowed several hours to go, watching the white

Photographs by W. P. Boland.

VIDETTE LAKE, 1910.

REFLECTION LAKE, 1910.
Photographs by W. P. Boland.



KINGS-KERN DIVIDE FROM REFLECTION LAKE, 1910.
Photograph by P. S. Bernays.

clouds drive over the pass, a Clark's crow impudently staring at the intruders from a stunted pine, while humming-birds darted over the heather unable to choose between their dainty bloom and the flowers in the ferns and willows below.

The following morning my comrade and I left camp ahead of the others and retraced our way down Bubbs Creek and followed up East Creek in the shade of huge red fir, through willow thickets, where bear had broken their way, over talus slopes where marmots whistled, across moss-covered patches where delicate ferns sought moisture, grassy slopes where yellow, red, and blue flowers bloomed and robins called, glades with wild gooseberry where startled grouse mothers warned their fluffy offspring, wise beyond their years.

Passing East Lake and on to Reflection Lake, for the day was young, we passed over an area of uprooted pines, piled like jack-straws by the winter's avalanche. Forcing our way through thickets, over glacier-rubbed slopes, we were rewarded by a view of the lake, a mirror of deepest blue reflecting the precipitous encircling slopes, a wild duck rising as we echoed our delight in viewing such a gem.

Returning to East Lake, we found camp selected at the upper end, where cedar and yellow pine reached to the water's edge.

In the gray dawn of the morning we climbed Mt. Brewer, up rocky slopes, keeping on one rock-covered shoulder until it met the jagged sky-line and then up the mountainous backbone, where the vertebræ were all too prominent, and finally 13,577 feet above the sea we crowded together on the summit, our feet dangling over eternity, monarchs of all we surveyed, the most exalted of mortals on earth for the time being.

Among the peaks around us on the horizon, Whitney, the goal of another climbing party, and many other peaks were pointed out by our leaders, and to the south we could see where the High Sierra divided.

Returning down the sky-line, we kept to the snow, fair sliding where steep, but full of pot-holes with wind-carved knife-edges on the level. Stopping for a plunge in East Lake, we pushed on to Bubbs Creek below East Creek Junction, where camp had shifted, and made up lost sleep on a bed of chinquapin leaves beneath red firs.

How the Outing Committee managed to repeatedly shift camp to accommodate our restless natures will always be a mystery, especially to the members of other clubs who know a few of the difficulties to be overcome.

Returned next day to main camp at Copper Creek. We rested a day, and then started up Kings River again, keeping on the left bank. Where Bubbs Creek came in from the east we went north up South Paradise Valley Fork of Kings River, stopping to photograph Mist Falls, where the river takes a long slide, then leaps out of a groove and drops in a rainbow misty sheet of white into a deep pool below, a hot zigzag over huge granite talus and a walk through a shady forest of white fir, cedar, sugar- and yellow pine, brought us to junction of Woods Creek.

Leaving camp the day following, we explored Muro Blanço Cañon, struggling through a tangled mass of chinquapin, willow, wild currant, gooseberry, and cherry, through scattering yellow pine, red fir, and juniper, taking refuge under some huge granite blocks as a thunderstorm swept through the cañon. This proved the forerunner of a series of storms which kept us in camp next day and drenched the party who had come over Glenn Pass from Bullfrog Lake to Rae Lake and down to camp.

The storm clearing somewhat, we took the trail up Woods Creek to South Fork and up that stream to the Rae Lake Basin. Crossing on a log over South Fork, one of the party fell in and was rescued by the alert financier from Texas, who plunged to her aid and thus averted a panic on the neighboring banks.

No one could ever hope to describe the beauty of the Rae Lake basin. The evening reflection in the lake, the

LOOKING UP PARADISE VALLEY, 1910.
Photograph by C. C. Clarke.

RAE LAKE FROM SIERRA CLUB CAMPSITE, 1910.
Photograph by C. H. Hamilton.

MT. RIXFORD FROM ACROSS RAE LAKE, 1910.
Photograph by C. W. Pohlman.

SUNRISE REFLECTIONS IN RAE LAKE, 1910.
Photograph by H. E. Bailey.

ISLANDS IN RAE LAKE, 1910.
Photograph by Mabel Sykes.

ARROW PEAK FROM BENCH LAKE, 1910.
Photograph by R. L. Glisan.

moon coming over the crest of Rixford and Gould, the quiet serenity of the lake, the massive majesty of the snow-capped peaks, Fin Dome in the cold gray of an early morning, taking on the warmer tints of dawn, and later every crag and rock brought out by the searching sunlight in microscopic detail in that thunder-cleared air.

The elevation of the lake was over 10,000 feet. Each and all seemed possessed with a feeling of indescribable buoyancy. Some of the difficult peaks were climbed by select parties, and nearly every one climbed the ridge and looked down into the Sixty Lake basin. A few trout planted several years ago had increased in such numbers and size as to keep the camp almost surfeited with fish. Bathing was ideal, everything was perfect. One pitchy log burned steadily for three nights, a self-perpetuating camp-fire. Reluctantly leaving the lake, one of the Outing Committee was hypnotized into guiding a party of seven of us on a five-day knapsack trip up Woods Creek, over the pass at Mt. Pinchot, down to Bench Lake in the upper basin of the Kings, up the other side, across another pass to the head of Cartridge Creek, down the creek past Marion Lake, by Triple Falls to the Simpson Meadows, up from the meadows, rich with horse feed, over the cañon wall, across Granite Pass and down Copper Creek, just in time to join the procession homeward—a side-trip compared to which main trips elsewhere would appear hopelessly uninteresting.

On the way back to Lemon Cove, opportunity was offered and taken for a side-trip into the heart of the Sequoia Forest in Redwood Cañon below Quail Flat. At Lemon Cove we saw charming orchards, which had been hidden in the gloom the night we started.

Take the trip, and you will see the difficulty of the task I have assumed in describing its attractiveness.

A VACATION TRIP TO MOUNT KINABALU IN BRITISH NORTH BORNEO.

F. W. Foxworthy.

Kinabalu is the highest mountain in the whole Malay region. It occupies a very commanding position in the northern part of the island and can be seen from the sea on three sides—the north, the east, and the west. Latitude, about 6° north; longitude, between 116° and 117° east.

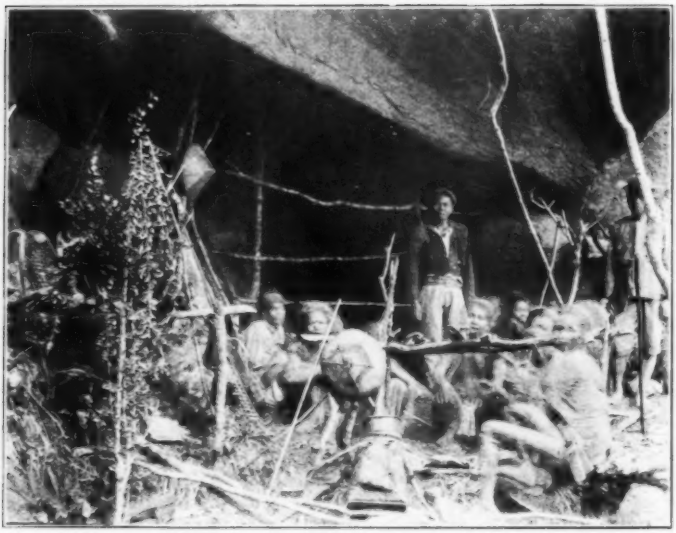
It has been climbed a number of times since the first trip of Sir Hugh Low in 1852. The great size, comparative isolation, and non-volcanic nature of the mountain give it peculiar interest in the part of the world where mountains of volcanic origin are common. The natives living in the country about the mountain have a sort of superstitious veneration for it. The Dusuns regard the top of the mountain as their heaven, the place where good Dusuns go when they die. Bad Dusuns are also supposed to try to reach the place; but their spirits are unsuccessful in reaching the top, being pushed over some of the huge precipices on the way up, falling to the bottom and having to begin the climb all over again, this process being continued indefinitely.

This peculiar regard for Mount Kinabalu has made the natives reluctant to climb the mountain and has been responsible for most of the difficulties encountered by those who have attempted the ascent. The natives have frequently declined to go, and, without their aid as carriers, the trip is impracticable.

In February of this year, 1910, Miss Gibbs, a botanist from the British Museum, made a very successful trip to the top. She treated her coolies so well that I found them eager to make the trip again when I arrived at Kiau a month later.

My trip was purely a vacation ramble, and its course

SUMMIT OF MT. KINABALU.



BREAKFAST AT PAKA CAMP, MARCH 20, 1910.

CAMPSITE AT KAMBURANGAH, MARCH 20, 1910.

was as follows: Leaving Manila in the latter part of February by a Spanish boat, the "Garcia Pitogo," the first four days were occupied with a trip to Puerto Princesa, Palawan; then two days in the small customs cutter "Sora" to Kudat, Borneo; and then about ten hours by the North German Lloyd S. S. "Marudu" to Jesselton, where I presented my letter to the Governor and obtained permission to make the mountain trip. On March 10th the Governor very kindly placed the G. S. Y. "Petrel" at my disposal to take me and my outfit from Jesselton to Usukan Bay. From Usukan Bay it was a walk of but seven miles, over an excellent bridle path, to Kotabelud, the real starting-point for the trip. Mr. D. R. Maxwell, the out-station officer at Kotabelud, made all the arrangements for the journey, and it is to his skillful management and to the confidence which the natives had in him that the success of the trip is due.

Kotabelud occupies a commanding position overlooking the lower valley of the Tampassuk River. There was a day or two of delay here to assemble the coolies who were to take my outfit to the base of the mountain, thirty-four miles distant. On the morning of March 13th we started the coolies about 8 A. M., and followed them on ponies a few hours later. The bridle path wound in and out along the bases of the hills overlooking the valley of the Tampassuk. It was a very pretty but a scantily populated country through which we were passing. Late in the afternoon we arrived at Kabaya, where the government maintains a shelter house. It had been raining steadily for an hour or so, and the shelter was a welcome sight to white men and natives alike. We made about fourteen miles that day.

March 14th.—As there were rough spots in the path ahead, the ponies were sent back this morning and we proceeded on foot. The country was becoming much rougher, the ridges higher, and the scenery much finer. The path led in a southerly direction, bending to the southwest and west where the valley of the Tampassuk

rounds the western end of the mountain. Its summit was in sight during nearly the whole day, and was viewed from various angles. The western or Maripari spur was particularly in evidence. About noon the path descended to the river at Kaung (about 1,000 feet A. T.), and then ascended steadily on the west side of the ridge to Kiau, which was reached about 3:30 P. M., some of the coolies not coming in till several hours later. All the way from Kaung up to Kiau we were pelted with a steady, cold rain. The government has another of its useful shelters at Kiau, and we were very glad to get in out of the cold and wet.

This place is about 3,000 feet A. T. It is scattered about on the exceedingly steep hillsides, and the Dusuns have a number of very well kept gardens, where they cultivate taro, rice, etc., on ground so steep that it is difficult to stand on it. The town is located in a small cocoanut grove, and there is also a fair supply of oranges and of the betel nut palm. There is also a very fine large pomelo tree, which was planted here by Sir Hugh Low on one of his trips a half century ago. The fruit is valued to some extent by the natives; but they have never taken the trouble to plant additional trees. These Dusuns are not a particularly ambitious lot, but they certainly do some very hard work in the care of their field crops. They are fond of various kinds of small game and do considerable trapping of rats, which they eat very eagerly.

From Kiau point our coolies returned to the lowland, some of them not even resting over night before starting.

March 15th.—This morning a good many of the men of the village came in to see us. Mr. Maxwell asked for volunteers to accompany me on my trip and about thirty men were eager to go. Since I needed only ten to take care of my outfit, it was possible to exercise some choice, and Mr. Maxwell picked out a very excellent set of carriers for me. In previous ascents of Kinabalu it was deemed necessary, in accordance with local tradition, to take three guides, or old men, whose duty was to say the

necessary prayers to propitiate the spirit of the mountain. After a lengthy conference Mr. Maxwell succeeded in persuading them that I could get along with only two old men to say the prayers. This was quite an advantage, as each of these priests expects a good deal more pay than the average carrier and does not carry a load. The whole of this day was spent by Mr. Maxwell in arranging the details of the trip and in dividing up the rice, fish, cigarettes, blankets, etc., so that each man would have his proper share. It is hard for one unacquainted with the brown races to appreciate the difficulty of negotiating with a primitive people and the patience required in arranging such a trip as this. A number of the previous expeditions to Kinabalu failed at just this point; but, thanks to Mr. Maxwell's splendid management, this was handled with the least possible delay, and the natives were satisfied. Heavy rain fell from 9 A. M. on for the rest of the day. The evening was clear.

March 16th.—This morning at 7:15 o'clock I took leave of Mr. Maxwell and started out on the mountain trip proper. The trail led up and down through taro fields and was difficult going for an hour or two till we struck the bed of the Kadamayan River, which is a branch of the Tampassuk and is here a mountain torrent. We followed up the bed of the stream, now wading against the current, now clambering over boulders, for about an hour and a half, when we were able to get a steep trail by which we could climb up the forest-covered side of the gorge. About noon we arrived at Lobang, alongside the stream again and at the foot of a high fall. We were able to make camp under an overhanging boulder a few minutes before the rain began. This place was determined upon as our camp-site because it was one of the points at which some of the necessary prayers had to be said, and the prayer must be said at night. The altitude of this place is about 5,000 feet A. T. The afternoon (2 P. M.) temperature was 62° and the temperature at 6 o'clock next morning about 60°.

March 17th.—This morning was fair. We started out about 8 A. M., crossing the stream and struck some good, hard climbing in the forest that covered the other side of the gorge. After two and one-half hours we crested the ridge and made camp at about 7,800 feet A. T. in the mossy forest. We found some of the remains of Miss Gibbs's camp and utilized them in building a shelter for ourselves. We were able to get a fairly good shelter constructed and a fire started before the rain commenced. A steady, cold rain fell all afternoon, but the night was clear. The temperature inside the shelter at 6 A. M. was 54°.

The camp-site was surrounded by a dense growth of ferns and other plants, including the common brake, *Pteridium aquilinum,* and several gleichenias. *Lycopodium cernuum* was much in evidence, trailing over some of the trees. Among the commonest trees were dacrydium, leptospermum, and some rhododendrons. Most of the trees were thickly clothed with moss and leafy liverworts, though the densest growth of this sort was found a little farther up the ridge.

In this neighborhood the animals have so little acquaintance with man that they are not very shy. During the afternoon a small, black shrew wandered into camp and even ran around over the bodies of the men who were lying down. When scared away it would run only a few feet and would then return to renew its investigations, displaying far more curiosity than fear. A small, dark-colored bird, which was quite common, displayed the same curious freedom from fear, alighting within a few feet of the men and flying away only a few feet when one tried to frighten it. It would follow one about, and was evidently of an inquisitive and investigating disposition.

March 18th.—Started out about 8 o'clock, following the ridge up through the very dense, mossy forest. It was a very clear morning, and we had some very fine views out over the lowlands. About noon we reached

Paka Paka, which has been the highest camp of all those who have climbed the mountain. It is usually spoken of as the cave, but is in reality a slight shelter formed by some huge boulders which have lodged alongside the stream. The latter here comes down at a very sharp angle and plunges over a great precipice a short distance below the cave. It is, of course, a very swift little stream, and the water in it is almost ice cold. The highest temperature recorded at Paka during our stay was 54° at 1 P. M. The only rain to-day was a few light showers. The cold to-night was extremely uncomfortable, although we had a good fire within our shelter. The Dusuns seemed to stand the cold much better than I did, although they did not have nearly such good covering. The altitude of this place is 10,000 feet A. T.

March 19th.—A bright, cold morning with some frost. Started out about 7 o'clock, taking only those men best qualified to climb. In less than an hour we reached the edge of the bare granite cap of the mountain at about 11,000 or 11,500 feet A. T. From here to the top the only vegetation was such as found lodgment in the crevices of the rocks. The leptospermum, which was a tree of about twenty-five or thirty feet in height at 7,500 feet, was here a small plant only a few inches in height; but the flowers were of about the same size in both places.

Before beginning our climb up the steep rocky slope, we had to wait for the Dyak policeman to fire a few volleys with his rifle. This was to apprise the spirit of the mountain that a white man was coming up. The ascent of the rocky slope was not remarkably difficult, though I found it necessary to go on all fours in places, and was occasionally troubled with shortness of breath because of the altitude. The rocky slope extends for about two or two and one-half miles. In places it looks almost like a huge natural amphitheater. It is interrupted here and there by huge rocky pinnacles of various forms. The rock is a gray granite. About 10 o'clock we reached the summit of what seemed to us the highest

pinnacle. At this point I deposited a Sierra Club cylinder containing a record of the date and the names of the men accompanying me. This cylinder was placed alongside the bottle record left by Miss Gibbs in February.

It was a very clear day and the view was magnificent. Practically the whole northern coast of Borneo was in sight, and we could see far into the interior. After an hour and a half on the summit we started down, for the clouds were rapidly closing in and the descent is much more difficult than the ascent. We reached Paka again in the afternoon about 2 o'clock, rather tired. About 4 P. M. a heavy thunder-storm commenced, and in a very short time the small stream past the cave had risen a number of feet and was making a terrific noise. During the night, which was clear, the stream subsided again and by morning it was down to its normal size.

March 20th.—The descent was notable only for the very heavy rains which made the going more difficult than would otherwise have been the case. We reached Kiau again on the afternoon of March 21st, thus having consumed six days with the mountain excursion. The round trip from Kiau could certainly be made in less time by several days were it not for the necessity of making night camp at Lobang and Kamburangah to permit of prayers being made at those places.

On our return to Kiau the men were promptly paid the stipulated wages and were each given some slight trinket in addition to encourage their good will. They were so well pleased with the trip and with themselves that they proceeded to celebrate by engaging in a drunken spree, which was kept up all night. Next morning I could not find enough sober men to carry my things on the return trip to Kotabelud, so it was necessary to get women to carry some of the packs. They proved more satisfactory than the men, being more used to carrying heavy cargo. We made a leisurely trip back to Kotabelud, arriving there on the 24th of the month.

ASCENT OF RED PEAK.

By S. L. Foster.

One day in August, 1910, after a delightful half day's horseback climb past famous waterfalls and through virgin forests of Douglas spruce, cedar, and pine, I found myself alone, about noontime, in gentian-covered Starr King Meadow. It lies at an altitude of about 8000 feet. The guide, saddle horse, and mule that had brought me and my traps from Yosemite Valley that morning were just disappearing among the trees on their way back. To the west the bare, conical dome of Mt. Starr King, 9200 feet high, stood up strikingly out of the otherwise unbroken forest, while to the east, above the tree-tops, could be seen the grotesquely splintered summit of Clark Mountain. I walked around a few minutes in the balmy sunshine enjoying the absolute quiet and the realization of my freedom from every restraint of civilization—like a bird out of its cage or a bear loose again in his native woods. Then, cheerfully shouldering my sleeping bag and two weeks' supply of provisions, I began making my way through the stately corridors and aisles formed by the immense fir and pine trees. Passing over the ridge to the east of the meadow I soon found a suitable camping place in an opening just inside the edge of the forest that fills the huge amphitheater at the headwaters of the Illilouette.

Before descending to the river bed I sat down and for a long time gazed admiringly from this bare granite eminence over the assemblage of magnificent trees standing below me like an army of hundred-foot soldiers at "attention," and filling the eight-mile basin solidly from rim to rim. It seemed as if I might be looking at some vast audience of giants just after their leader had asked every one to rise and join in a grand chorus. It was a most impressive scene.

I established my camp at about 7500 feet elevation at the junction of two rushing mountain streams. A hasty study of the geological map led me to identify them as Illilouette Creek and Clark Fork. Later, to my sorrow, they turned out to be Clark Fork and Gray Creek. I was so buried in the forest that I could see nothing but trees on all sides. Yellow pine and tamarack, silver fir, balsam fir and quaking aspen hemmed me in, but I had a fine flat-topped granite boulder for a fireplace and table, plenty of fuel and water at hand, and an abundance of balsam fir boughs for a bed. A tall yellow pine, six feet in diameter, stood in the center of the clearing and furnished in the roughness of its bark convenient points for suspending my few household articles.

Subsequent events showed that this camp-site was really a playground or a fighting place for Douglas squirrels, who raced madly about every morning at dawn. They barked in wild hilarity and often waked me too early for my taste. One morning, for instance, they scrambled past my face and over my bed, then up and around my pine-tree pantry, ignoring and avoiding my precious utensils but giving numerous jolts to my nerves. I kept perfectly quiet, enjoying it all and seeing all I could without disturbing the fun. I finally made out that the chaser must be the proprietor of that grove, and the chased some intruder.

After a few meals from the mountaineer's usual freak bill of fare, I started out at six one morning to climb Red Peak—11,700 feet high—though its top was not visible from that side of the range. I expected a hot day's work, wore only a sleeveless nainsook undershirt and a pair of light tennis trousers and carried a meager lunch of Swedish bread and bacon sandwiches.

It was a glorious day in a glorious place. I felt exhilarated in every faculty. As a Canadian guide quaintly expressed to me his feeling on climbing some ridge at dawn while carrying mail to Ottawa, "I felt as if I was fresh born." Guided only by the music of the tumbling

water, I joyfully wandered along at the beginning on the open park-like floor of the forest, hearing everything, seeing everything, pleased with everything. Occasional glimpses through the tree-tops of nearby Clark Mountain, or Gray Peak ahead or beside me, or of Mt. Starr King behind me, assured me of the general accuracy of my upward course, which gradually grew steeper and steeper. It was harvest time for the squirrels, but each one seemed able to spare time to stop and present me with a piece of his mind as I passed. The blue jays, too, readily left their occupations and screamed out their disapproval of my appearance. I met three mild-eyed does, who quietly loped off out of sight, but a fine old buck with his horns "in the velvet," after a few indecisive steps of alarm, stood his ground and calmly gazed at me across a meadow a hundred feet away with an expression as if he were enjoying it as much as the average small boy enjoys a circus parade. He was no "spike buck" nor "forked horn," but possessed a magnificent set of branching antlers such as the murderous nimrod likes to hang up as a trophy.

I renewed my old acquaintanceship among the flowers and made some new ones. Beautiful blue larkspurs that grew on stems one and a half to two feet high near San Francisco, here grew on stems six feet long in generous two-foot racemes. The charmingly colored delicate pink mimulus and the queerly shaped purple monk's hood nodded over the stream, while the cardinal castilleias shone forth on three-foot supports. In the chance bits of bog or meadow companies of the striking little alpine (tiger) lilies raised their orange and vermilion heads on tall stalks above the other vegetation as if superior to the rest. On the dry granite slopes the scarlet bugler and the scarlet gilia brightened up the scene unexpectedly, while further up I met with the interesting spikes of pink elephant's heads, the dainty May queen's lace, the fragrant blossoms of the grass of Parnassus, the purple cyclamen, the golden stars and the white violet. Last of all at the

snow line came the lovely pride of the mountains (the magenta pentstemon), the rosy alpine heather or bryanthus, and the lilac-tinted alpine phlox. These cheery mountain blossoms were not disclosed in great patches and fields of bloom like the eschscholtzia, the orthocarpus, the iris, and the godetia of the lowlands, but occasional, secluded and unexpected like the deer, the bears and the mountain quail, and so the more attractive and appreciated.

I enjoyed wild currants, thimbleberries, elderberries and a few strawberries, and I peered into every pool for trout. In this latter search, however, I was disappointed.

Except for a chance case-making caddis worm lumbering along the bottom, or a water strider darting about on the surface, the crystal snow water was as devoid of life as if it had just come from under a glacier.

While resting in a field of barren talus I suddenly became conscious of being stared at. About twenty feet away I spied a native looking at me in open-eyed amazement. His head was about the size of a domestic cat's, but with short erect ears and a long nose like a fox's or a weasel's. His coat was reddish above from the nostrils back and yellow below. I saw only this little fox's head and shoulders and saw them only as long as I remained motionless.

It was one of those balmy, sunny Sierra days, and back and forth as the wild goats on Santa Catalina Island taught me twenty years ago, I zigzagged up the steep, heavily timbered ridge between Gray Creek and Red Creek, almost always in the shade of grand yellow pines, mountain pines, or silver firs. The cones on the silver firs stood erect on the topmost limbs like little barrels, contrasting sharply with the long pointed cones of the sugar-pine seen suspended from the tip ends of the branches. Higher up I met old, thick set junipers, lost the yellow pines, and at the timber line found the tough dwarf or white-barked pine last of all.

Having had such a good time botanizing, taking notes, studying the geological quadrangle, and exchanging

repartee with the squirrels, the jays, the water ouzels and finally the Clark crows, who announced my arrival above the timber line with rather unnecessary vigor, I did not reach the limit of vegetation in the cirque under the south face of Red Peak till noon. Here at about 10,000 feet elevation I lunched, took a rest, and was amused to notice a new character watching me. His nose was blunt, his ears short and his tail resembling that of a prairie dog or a beaver. He studied me with such consuming interest —now lying down, now standing erect on his hind legs, that I came to the conclusion that this mountain beaver(?) was collecting material for a book on "Mountain Climbers That I Have Met."

Remembering that Twin Peaks in San Francisco are 900 feet high, I estimated that it was about 500 feet more to the top of Red Peak from where I lunched at the source of Red Creek. It turned out to be the hardest 500 feet of mountain that I had yet ascended. My experience was midway between going up steep stairs and climbing a ladder, for I had to use my hands as well as my feet many times. This Red Peak, whose monumented top I saw for the first time from the saddle between it and Gray Peak at two o'clock, ought to have been called Red Knife-edge. The highest peak is located on one of three knife-edges or arêtes radiating from a common center. This knife-edge, moreover, is not composed of enduring material like solid granite, but seems as if made of loose pieces cemented with a substance which time dissolves or which yields readily to the splitting action of the frost. On the north face the rock has disintegrated until there is a nearly vertical precipice three or four hundred feet high. On the south and west exposures the surface is as nearly vertical as the angle of repose will permit rock talus to be.

I did not reach the top till two-thirty, but found the view, which is always considered to be the mountain climber's ample reward, fully up to expectations, especially across the cañon of the Merced toward Mounts Lyell and Ritter. The atmosphere was clear and the sunshiny day

perfect. Snow was nearly gone except on the northern slopes of the highest peaks. I sought for, but found no Sierra Club canister in the monument. Having little time to spare and not even a comfortable place to sit, after counting forty-two emerald or sapphire-colored lakes and locating many of the most celebrated summits both higher and lower than my 12,000-foot outlook, I started back via Ottoway Creek. I wished to see the great cirque between Red and Ottoway Peaks and to return by a different route than the one by which I came up, since the map showed Ottoway Creek entering the Illilouette above Red Creek.

The strongest impression left on my memory from my survey over the granite landscape below was the almost pitifully small proportion of the vast area that was covered with vegetation. The forest to the west, through which I had passed during my ascent of the mountain, was not visible from the top where I stood.

The long hour spent descending that awful rock pile from Red Creek was more exhausting than the three hours consumed in climbing on the other side. Everything seemed to lose balance as soon as I stepped on it. I regaled myself with generous handfuls of snow as a solace for the hard work when I reached a level spot.

This Ottoway Peak could very appropriately have been called Blue Peak, since it has a sky-blue color. Thus it contrasts with Red Peak, which is really red, varying in color all the way from Etruscan red to yellow.

After resting leisurely, viewing the great cirque and deep blue glacial lake at its base, and fully gratifying my city appetite for snow, I discovered that it was five o'clock and concluded that it was time to begin hurrying if I was to cover in two hours the ground that took practically eight hours coming up. Collecting flowers, writing notes, and gossiping with natives were cut out, and I hastened along the forest-covered path of the ancient glacier, high up out of sight of any stream, but presumably near it and expecting every minute to meet the Illilouette Creek that

I had ascended. At six o'clock, much to my surprise, I discovered that my path was leading me toward a rushing stream coming from the south into the river course in which I was, and that it was a stream larger than the one that passed my camp. I saw that I had lost my bearings, but felt that I could still reach camp if the daylight lasted, since I could see Mt. Starr King occasionally ahead of me as a guide.

Six-thirty came, and seven. I passed the conspicuous red sign of a soda spring and a gorge waterfall like the Rancheria Falls in Hetch Hetchy, though not as high. I saw a cave, the first that I had seen in the Sierra, with a circular entrance about eight feet in diameter in the face of the solid granite cliff above the stream, and accessible only at low water, but I had no time to investigate then. I tried climbing the ridge intervening between my present river bed and that to the north, presumably the one of my camp, but was driven back by the aspen and the manzanita. It was now rapidly growing dark in the thick forest. Seven-fifteen came and I got around the lower end of this ridge and squared away for home. Seven-thirty and night closed in and I was lost. I was neither an owl nor a chipmunk and was almost helpless in the darkness of the dense growth of the river bottom. I could not tell time by my watch, and after struggling through a tamarack thicket and probably passing near my camp, I fought out into the comparative open under a small dome and admitted to myself that I would have to pass the long, cold night practically without fire, bed, clothes, sleep or food.

I heard once that Mr. Muir had danced all night on Mt. Whitney's 14,500-foot top to keep from freezing, but after fifteen hours of almost continuous exertion and no supper I did not feel like dancing. I tried to climb the dome to reconnoiter, but after stumbling in the pitchy darkness through the baffling labyrinths of manzanita and buckthorn brush for half an hour, catching my clothes on the obstructions, scratching my arms and face, and

tearing the ring out of my watch, I gave up the attempt. Then it occurred to me that the weather-beaten granite boulders that looked so ghostly in the starlight might have retained some of the heat from the afternoon sun, and finding them warmer than the air I snuggled down in a sheltered corner to rest. When I began to cough, however, I felt that the hospitality of those rocks was not going to suffice.

Clad in my vulnerable tropical attire, it seemed to me as if the chill night draughts flowed down from the snowy peaks like breaths from the north pole. It was certainly a "nipping and an eager air" that night, as Horatio would say.

I thought of my canvas leggings, and removing them hung them around my neck, one in front and one behind under my summery raiment. When finally my teeth began to chatter I decided that I would really have to dance.

In the dim light from a moonless sky in a pine forest I felt out a straight course on the sloping hillside that was free of saplings, cones and dead branches between two giant pine trunks and forty of my paces long. Thirty round trips I estimated would make a mile and occupy half an hour. Every six round trips I went through six movements in eight different gymnasium performances, which any one familiar with dumbbells or chestweights can imagine. Every ten trips I lay down on the pine needles and took a short rest, the biting wind effectually preventing my falling asleep.

Once, going toward the low murmur, I worked my way in the darkness down to the stream for a drink of water, and several times I heard the breaking of large twigs as if an inquisitive deer had been attracted by my unusual performances. Thoughts of bears or mountain lions did not worry me at all as I had never yet been molested, and I had a five-inch bladed bowie knife that gave me confidence. Rattlesnakes, I had always understood, if present at all were usually not abroad after dark.

Pneumonia and bronchitis were the enemies that I feared through that cheerless night, and I could easily believe that their germs were seated on the logs and boulders nearby, coldly watching my efforts to keep warm and awaiting the psychological moment to make their appearance.

Thirty—sixty—one hundred and fifty round trips had been tramped with the corresponding gymnastic exercises, and I was in doubt whether it was only midnight or two in the morning, or whether I could keep that sort of thing up much longer, when Venus, the morning star, blazed forth over the top of Clark Mountain like a beacon of good cheer. Having been a Halley comet enthusiast, I knew that the dawn came soon after Venus became so bright and felt encouraged. It was too cold to star-gaze, however, and I had to keep trudging back and forth till dawn.

At daylight I found myself about 500 feet from my camp. At 4:50 I rolled out my sleeping bag, from which I had emerged at 4:30 the morning before. Pulling on a sweater I was soon in the land of dreams, with my shoes and leggings for a pillow and apparently none the worse for my nine hours in cold storage. I had had twenty-four hours of almost continuous physical exertion, had been twenty-four hours without sleep, and, as I did not get anything to eat till noon, twenty-four hours without food. I was strongly reminded of the comment of the editor of the Sacramento *Bee* the morning after Artemus Ward delivered a $2.50 lecture in the early days. "The audience," the editor said, "was entirely satisfied with the lecture—so well satisfied, in fact, that they did not want any more at the same price."

THE DISCOVERY OF THE NEST AND EGGS OF THE GRAY-CROWNED LEUCOSTICTE.

By Milton S. Ray.
Photographs by Oluf J. Heinemann.

[An extract republished from *The Condor* by courtesy of the editor, Mr. Joseph Grinnell, and the author.—Editor.]

After baffling scores of searching oölogists during the long period since the bird was first described by Swainson, in 1831, the nest and eggs of the gray-crowned leucosticte *(Leucosticte tephrocotis tephrocotis)* have at last been brought to light. The place of discovery is Pyramid Peak, a lofty mountain of the great Sierran chain, in the eastern portion of Eldorado County, California. And now, a nest having at last been found, the reason why the small army of collectors have searched in vain becomes more apparent, the nests being either invisible or inaccessible, probably as a rule both.

The rosy finch, as some would prefer to call the leucosticte, is ever active either of foot or wing, among the rocks, along the cliffs or while feeding on stranded insects upon the snow. Endowed by nature to combat the fierce gales which prevail almost continually in these high altitudes, this bird possesses great power in its broad stretch of wing. The flight is rapid, in long, graceful, sweeping curves, and the birds mount hundreds of feet even against the strong headwinds without much apparent effort. From the edge of the chasm we noticed a number of birds fly to crevices in the sheer walls of granite on the west side of Pyramid; but as it would have been utterly impossible to follow them we contented ourselves with watching those in more accessible situations.

The males are certainly beautiful examples of bird life, in their brilliant colorings of rich chestnut brown, streaked on the back with dusky and edged on the wing- and tail-coverts with light scarlet. The forehead and

TWO POSES OF THE GRAY-CROWNED LEUCOSTICTE.

THE CENTRAL OPENING LED TO THE NEST, WHICH, HOWEVER, WAS OUT OF SIGHT THREE FEET BACK BENEATH AND BETWEEN THE ANGULAR BLOCKS.

forepart of the crown is black, while the balance of the crown consists of a broad, conspicuous patch of gray. Much of this gay plumage is lacking in the females, however, who are much paler and duller colored. In size the bird is about equal to the mountain bluebird, which it also resembles somewhat in flight, although it is much swifter on the wing than sialia. In grace of build, the leucosticte according to my idea has few equals; the form of its finely shaped head and graceful neck, so often lost in the preparation of skins, can be seen to advantage in the accompanying profile-photograph.

[For lack of space we omit the description of an earlier visit to the summit of Pyramid Peak during which probable nesting sites were located. The narrative of events is resumed on top of the mountain during the successful second trip.—EDITOR.]

We reached the top of the peak about 11:40 and after a quick lunch, for a moderate breeze had begun blowing, we started down to the nesting site. By chance more than from memory I came to the second pile of rocks from the nest. Like the east side, the north side of the peak appeared entirely bereft of its former bird-life; and it was with drooping spirits, although not entirely without a keen feeling of expectation that I approached the nest. My hopes revived, however, as a leucosticte flew out from some nearby rocks, and it was an anxious moment when I reached the aperture among the granite slabs and peered in. In the dim light, among the feathers of the nest, I could just discern three eggs which appeared dark with incubation. When I joyfully informed my expectant companions of the victory, Duttke, who, among other things was yell-leader of the expedition, started three rousing cheers; and no small victory it was, for to me it meant that the two trips to the peak and back, 120 miles, taking almost two weeks' time, had not been in vain.

Heinemann and Duttke now joined me, and the camera was set at once for pictures. As the bird was not in the least afraid, and lit on the rocks all about the nest-

entrance while we were arranging the camera, we dispensed with using the long rubber tube. In fact, we soon found that so persistent was the mother-leucosticte in her efforts to reach the nest, that it was necessary time and again to drive her away in order to keep her from entering. I noticed particularly that this bird never used the broken-wing tactics as we had seen others do on our previous visit. The method she employed was to disappear for a time among various nearby rocks, endeavoring to draw us away from the spot. It was on one of these occasions, after our patience had been almost exhausted, that I decided it might be barely possible she had returned to the nest by some of the under-rock passages. On looking in towards the nest all appeared dark and I knew at once the bird must be sitting. It was only due to the fact that the nest and eggs were light colored that they had been visible at all. I experienced considerable difficulty in flushing the bird, almost touching her before she finally left the nest; and then the way she went fluttering along the narrow passage made me fear for the safety of the specimens, which had not yet been collected.

Gently persistent, with those little cheery, pleading notes, over the rocks she came again and again, although repeatedly driven away, and the solicitude she showed could not have but touched the heart of any observer. I must say, even in spite of their extreme rarity, it was not without a certain feeling of compunction that the eggs were taken. Every time the bird returned, when it was possible, a picture was taken and in all we secured nine photos, the best ones being herewith produced. This work covered a period of two and a half hours, and during all this time the male did not appear; in fact, no other birds at all were seen.

At last, for it seems even the patience of the leucosticte has its limitations, the bird would no longer come within camera range, and we turned our attention to the eggs and nest. In order to reach these it was only necessary to move a single boulder, and this, weighing only about 100

pounds, was an easy matter. Even with the boulder removed, Heinemann pronounced the nest photographically impossible. Before disturbing the boulders we had taken a view of the nesting site, so we had to content ourselves with this. Bringing the eggs to light disclosed the fact that these consisted of four instead of three, one being hidden by feathers and the depression of the nest, and instead of being advanced in incubation as we had supposed, they proved almost fresh, two being practically so and two slightly incubated. One of a poetical turn of mind might compare the rosy plumage of the leucosticte with the gorgeous tints of the sunset clouds or liken the eggs to the drifted snow that characterizes its home. The student of bird-life cannot, however, indulge in such fancy flights, if he is desirous of following the straight and narrow path of science. Thus it behooves me to simply state that the eggs are pure white, unmarked, ovate-pyriform in shape, and in size measure in inches: .89 x .62, .90 x .63, .91 x .63, .92 x .62. The sharply pointed end and the peculiarly fine texture of the shell make the eggs at once distinctive. After being carefully taken from the nest, one by one, the specimens were well wrapped in cotton and placed in a partitioned box made of heavy block tin.

Our time was next devoted to the nest. To show how difficult this was to see, I may state that I pointed out the aperture to Duttke and asked him if he could see the nest within. After viewing it from seemingly every possible angle he declared he could see nothing of it and was rather amazed when it was later shown him. Investigation showed the nest was situated in a small patch of soil, in a depression 1¼ inches deep, which had undoubtedly been hollowed out by the birds themselves. As the nest was 2½ inches high it was thus equally above and below the soil. It is a curious fact that this spot was one of the few places on the entire peak where soil was visible. If in all cases the birds penetrate to the soil to build, it would explain why they go to such great depths.

The nest is almost entirely and very compactly made of dry-grass stems and roots. These have the appearance of having been uprooted and are of course of the previous season. As the nearest available grass is half a mile or more from the nesting site, the reason why the building birds made such long trips for material is explained. Fine light-colored grass forms the lining, with the addition of a few feathers. One of the latter runs lengthwise across the bottom of the nest cavity, dividing it in half. Unfortunately a fluffy feather belonging to the nest was blown away on the peak and lost. The nest is oval in shape and the dimensions are as follows: Top, 5 x 3½ inches; cavity, 2½ x 3 inches; depth of cavity, 1 inch; depth of nest over all, 2½ inches.

THE PASSING OF OUR MOUNTAIN MEADOWS

By Harold C. Bradley.
Photographs by the author.

Returning to the Sierra after an absence of many years I was struck with the changes which time had wrought in many of our little forest-rimmed meadows. My first intimation of the change came as I approached Tamarack Flat on the way to Yosemite Valley, intending to camp at the lower end of the flat, where ten years ago were open patches and good feed for the horses. That portion of the flat is now a thicket of young tamaracks, almost impenetrable and devoid of grass. Little Yosemite Valley has in the same way lost many of its smaller scattered patches of meadow before the advancing tamaracks, which there have shot up into jungles of slender, worthless lodgepoles such as one finds in many of the mountain regions of the Northwest. Fifteen years ago there was an abundance of feed about the lower cabins at Lake Tenaya; now one can hardly ride a horse through the mass of little trees which has replaced the sward. In Tuolumne Meadows one not infrequently finds a scattered growth of young tamaracks dotting the grass, and occasionally an extended thicket pushing its way out into the open like an advancing flood, killing the grass and thrusting upward with great rapidity for light and air. Where the trees are not numerous enough to have destroyed the grass, many of the little meadows have to be cleaned out with an axe before they can be used by a tethered horse.

From observations in the park this summer I should estimate that we have lost nearly a quarter of the available feed area of the meadows which lie within the large timber belt. At higher levels the loss is much less; the meadows are larger and more numerous there, and little inconvenience results as yet to the camper. It is only a

question of a few years, however, when the higher meadows will begin to show the results of the encroaching pines as clearly as do the lower ones to-day.

There is perhaps no one feature of our Sierra more attractive to the lover of the woods than these little spots of verdure and choice flowers scattered among the desolation of bare rocks and the dark stretches of the heavy timber. They are lovely to look upon. They assure water and good feed for the horses. They make for the comfort and ease of mountaineering in the Sierra. Their deterioration must eventually injure the camper; their loss would be irreparable. It was to preserve the grass of the meadows as well as the trees of the forest that we excluded sheep and have partially excluded cattle. But it is the meadows themselves and not a season's crop of grass that are now at stake. There is no doubt that an excellent open condition of the upland meadows when the Park was first set aside was attributable to the sheep and their herders. The sheep browsed close, and year after year nipped off the seedling pines. What escaped the sheep was killed in the yearly brush and grass fires started by the herders. In this way the natural aging of the meadows and their replacement by trees was checked, and they were kept open, soft, and verdant.

From the greater portion of the Park the sheep have been excluded efficiently now for from ten to twenty years. For a like period extensive fires have been prevented. Some of the natural results of stopping these two agencies are now becoming clearly apparent. Left to itself, the meadow,—which was once a lake bed, a wet glacial pocket, or a spring dammed back by a stick of down timber till peat and silt had filled it—gradually grows drier. Eventually it becomes dry enough for the seedling tamarack to take root. In a few years from that time the meadow is no more. A thicket of spindling pines takes its place, killing the grass and converting the moist spongy soil into a dry flat. The water which before was held in the soil is now carried up into the trees, exposed

TUOLUMNE MEADOWS, SHOWING GROWTH OF YOUNG PINES, 1910.

PORCUPINE FLAT, CHOKED WITH YOUNG GROWTH, 1910.

SIMPSON MEADOW, MIDDLE FORK OF KINGS RIVER, 1910.
Photograph by C. W. Pohlman.

in enormously increased surface to the warm, dry currents of air above the immediate surface of the ground. Many of these spindling lodgepole pines die after a few years; the whole thicket is rather easily blown down or lodged by a severe storm, and in the event of fire it is likely to succumb easily and remain a mass of dead and twisted stalks for the next fire to consume. The dry porous soil, which was before a mass of moist peat, is consumed in the first burning over and is good for nothing for many years. It may come about that a few sturdy trees outgrow and kill the rest, so that in time a fairly good stand of strong timber results. But even should this take place the original meadow was of far greater value than the resulting dry tamarack flat. The meadow is a much more efficient conserver of excess water than is the grove of trees. Its soil is a sponge, soaking up quantities of water as the snow melts, and gradually delivering it to the rill that trickles from its lower edge. A brooklet rising in a chain of such little meadows is almost sure to preserve its flow throughout the season. Conservation of our water therefore, as well as preservation of our mountains' charms, demands that the meadows of the valley bottoms and about the sources of the streams be preserved as carefully as the timber on the valley walls and ridges.

A number of remedies occur to one. Perhaps the best would be the gradual grazing again of the Park by sheep —allowing the sheep to occupy successive portions of the reserve in successive years. A portion of the Park would thus each year be practically closed to campers with pack animals, though it need not be a large portion. Again, our forest rangers, armed with brush-scythes and axes, could do much toward clearing out the young growth from the edges of the meadows. To cover the entire Park once in five years would be no small task. It should be undertaken, however, at once, for each year increases amazingly the size and number of the trees on the skirmish line. We have already lost some of the smaller

grassy nooks; let us not through blindness or neglect allow the rest to disappear before the inevitable forward march of the unchecked forest.

[The facts presented in this article are interesting and deserve further attention. Doubtless fires helped to keep the meadows open. The matter of light-firing is dealt with in another article in this BULLETIN. We are strongly opposed to the suggestion to permit sheep-grazing in the Park. The damage would be far greater than any possible benefit. In our opinion the article does not take account of the fact that these mountain meadows both existed and persisted before the advent of sheep in these mountains.—EDITORS.]

"LIGHT BURNING" AS PRACTICED BY THE FOREST SERVICE.

TIMBER LAND REDUCED TO BRUSH LAND BY FIRE.

SAPLINGS AND POLES KILLED OUTRIGHT BY FIRE.

WITHOUT PREPARATION TOO COSTLY TO BE PRACTICAL. "LIGHT BURNING" DESTROYS YOUNG TIMBER OF THIS CHARACTER, UPON WHICH WE MUST DEPEND FOR OUR TIMBER SUPPLY OF THE FUTURE.

FIRE AND THE FOREST—THE THEORY OF "LIGHT BURNING"

By F. E. Olmsted,
District Forester for California, U. S. Forest Service.

The present intense interest in the forest-fire question is decidedly valuable because it is sure to result in a determined effort all along the line to lessen both the fire risk and the fire damage. Public discussion of the matter has brought to light, among other things, the fact that certain people still believe in the old theory of "burning over the woods" periodically in order to get rid of the litter on the ground, so that big fires which may come along later on will find no fuel to feed upon. This theory is usually accompanied by reference to the "old Indian fires" which the redman formerly set out quite methodically for purposes connected with the hunting of game. We are told that the present virgin stands of timber have lived on and flourished in spite of these Indian fires. Hence, it is said, we should follow the savage's example of "burning up the woods" to a small extent in order that they may not be burnt up to a greater extent bye and bye. Forest fires, it is claimed, are bound to run over the mountains in spite of anything we can do. Besides, the statement is made that litter will gradually accumulate to such an extent that when a fire does start it will be impossible to control it and we shall lose all our timber. Why not choose our time in the fall or spring when the smaller refuse on the ground is dry enough to burn, the woods being damp enough to prevent any serious damage to the older trees, and burn the whole thing lightly?

This theory of "light burning" is especially prevalent in California and has cropped out to a very noticeable extent since the recent destructive fires in Idaho and Montana.

The plan to use fire as a preventive of fire is absolutely good. Everything depends, however, upon *how* it is used. The Forest Service has used fire extensively ever since it assumed charge of the public timber lands in California. We are selling 200,000,000 feet of timber and on all the lands which we logged over we see to it that the slashings and litter upon the ground are piled up and burned. This must be accomplished, of course, in such a way that no damage results to the younger tree growth, such as seedlings, saplings, thickets and poles of the more valuable species. If we should burn without preparing the ground beforehand, most of the young trees would be killed. In government timber sales the purchasers are required to do this work. Under average conditions in California it costs them about $2.50 an acre. It is very probable that the Government could not do it for less. If, now, we should extend this operation to all our most valuable timber lands which have not been logged off (approximately 8,000,000 acres) and provided we repeated the process every three or four years, as would be necessary to obtain good results, it would cost the Government something like $5,000,000 a year, while our total appropriation in California for all work of the Service is only $731,802.17. It would appear, therefore, that if we should perform the work as thoroughly as it is now done in the case of lands covered by lumber slashings, the expense of the job would be out of all proportion to its usefulness.

It is true that the work might be done at less cost, but in that case the results would most certainly be unsatisfactory. "Light burnings" have never been undertaken on an extensive workable scale in California. With the exception of two or three lumber companies the Forest Service is the only owner of timber in the State of California which has used and is using fire in a practical way for cleaning-up purposes.

What "light burning" has been done on private lands in California, accompanied by preparation of the ground

beforehand, shows that wherever the fire has actually burned, practically *all* young trees up to fifteen years of age have been killed absolutely, as well as a large part of those between the ages of fifteen and forty years.

The operation, to be sure, has resulted in cleaning up the ground to a considerable extent and will afford fairly good protection to mature trees in case they are threatened by fire in the future. If a fire comes along it will naturally not have as much rubbish to feed upon and may not be so hot as to injure the larger tree growth. In other words, a safeguard has been provided for timber which may be turned into dollars in the immediate future. With this advantage has come the irreparable damage to young trees. It has amounted, in fact, to the almost total destruction of all wood growth up to the age of twenty years.

This is not forestry; not conservation; it is simple destruction.

That is the whole story in a nutshell. The private owner of timber, whose chief concern is the protection of trees which can be turned into money immediately and who cares little or nothing about what happens to the younger stuff which is not yet marketable, may look upon the "light burning" plan as being both serviceable and highly practicable, provided the expense is reasonable. On the other hand, the Government, first of all, must keep its lands producing timber crops indefinitely, and it is wholly impossible to do this without protecting, encouraging, and bringing to maturity every bit of natural young growth. Any attempt to artificially reproduce the area of government forests as a whole would be impracticable from the standpoint of expense and has also proved very uncertain of success. Forest organizations the world over rely chiefly upon a natural regrowth to take the place of the old timber, and planting and sowing are resorted to only in cases where the natural regrowth has failed or is exceedingly hard to obtain; in such cases, of course, planting is indispensable.

This experimental "light burning" has cost approximately 75 cents per acre. Therefore, to clean up and burn the government timber lands in California even partially and most unsatisfactorily, coupled with a most serious loss in young growth (which in itself would prohibit the operation), an expense of something like a million and a quarter dollars a year would be necessary, provided we repeated the process every three or four years, as deemed necessary by those advocating the theory.

As for the "old Indian fires," in California alone they have reduced over 2,000,000 acres of valuable timber lands to non-productive wastes of brush; they have damaged the mature stands of virgin timber which we now have to the extent of reducing their original volume by at least thirty-five per cent; and they have practically eliminated most of the young growth in their paths up to thirty years of age. This is a fact fully sustained by the most casual observation on the ground.

The accumulation of ground litter is not at all serious and the fears of future disastrous fires, as a result of this accumulation, are not well founded. Fires in the ground litter are easily controlled and put out. On the other hand, fires in brush or chaparral are very dangerous, destructive, and difficult to handle. Brush areas under and around standing timber are the worst things we have to contend with. Brush is not killed by fire; it sprouts and grows up again just as densely as before. The best way to kill brush is to shade it out by tree growth, but to do this we must let young trees grow. Fires and young trees cannot exist together. We must, therefore, attempt to keep fire out absolutely. Some day we will do this and just as effectively as the older countries have done it for the past 100 years. In the mean time we are keeping fires down in California by extinguishing them as soon as possible after they begin. It is true that fires will always start; that we can never provide against. On the other hand, the supposition that they will always *run* is not well taken. If we can stop small fires at the start, big

fires will never run. With more men, more telephones, and more trails we shall be able to do this and at a cost of only a cent or two more an acre. We are now expending barely half a cent an acre in fire protection.

Another argument is that if the ground is kept clean by "light burnings" we shall never have any "crown" fires, and the frightful conflagrations in Montana and Idaho during last summer are pointed to as examples of criminal negligence on the part of the Forest Service. It is said that if we had burned over the ground lightly from time to time such fires would never have occurred. As a matter of fact no amount of "light burning" would have made any difference whatever. If we had burnt the ground until there was nothing upon it but bare earth the same disastrous results would have followed. The fires were in the *tops* of the trees, advancing in solid masses of flame. The condition of the ground had absolutely nothing to do with it. The top-fires resulted, in the first instance, from many small and scattered ground fires which the inadequate force was unable to get to, control, and put out at the start. Then came the hurricane, which carried these fires up into the crowns of the trees. If the small fires had been properly put out at the very first there would have been no ground fires. If there had been men enough, telephones enough, roads and trails enough, they could have been extinguished and we should have had no "crown" fires.

The theory of "light burning" is sound. The Forest Service uses it in practice, has done so for years, and will continue to do so. "Light burning" cannot be considered, however, unless it is preceded by such thorough preparation of the ground as will insure complete protection to young growth when the fire comes along. At present this preparation cannot be made effective except at an expense which is wholly out of the question. If it could be done at a reasonable cost, we should gladly and immediately extend our fire cleanings as practiced on lumbered areas to all uncut forests.

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The purposes of the Club are:—"To explore, enjoy, and render accessible the mountain regions of the Pacific Coast; to publish authentic information concerning them; to enlist the support and co-operation of the people and the Government in preserving the forests and other natural features of the Sierra Nevada Mountains."

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CROSSING WOODS CREEK UNDER DIFFICULTIES, 1910.
Photograph by R. L. Glisan.

EAST LAKE FROM OUTLET, 1910.
Photograph by H. E. Bailey.

EAST VIDETTE, LOOKING ACROSS BULLFROG LAKE, 1910.
Photograph by C. W. Pohlman.

LOOKING DOWN CAÑON BELOW PARADISE VALLEY, 1910.
Photograph by Arthur Gray.

LOOKING UP WOODS CREEK CAÑON FROM DOME AT HEAD OF PARADISE VALLEY.
Photograph by M. V. Tenney.

FIN DOME FROM THE SOUTH.
Photograph by E. T. Parsons.

LOWER END OF RAE LAKE.
Photograph by Mabel Sykes.

REPORTS.

REPORT OF OUTING COMMITTEE, 1910 OUTING.

The Tenth Annual Outing of the Sierra Club was an eminent success in every respect. There were 175 regular members in the party, among whom were more than a dozen members of the Chicago Geographical Society.

The main camp was established in Kings River Cañon, but only a few stayed in that camp during the entire Outing. Nearly the entire party spent a week in the camp established just above Vidette Meadows. A party of about 30 climbed University Peak, and another of 46 climbed Mt. Brewer, and Bullfrog and Charlotte lakes, Kearsarge Pass, Center Basin and other nearby points of interest were visited. A few knapsacked over the Kings-Kern divide and climbed Mt. Whitney. Quite a few knapsacked over Glenn Pass and after visiting Rae Lake and vicinity, joined the main party in Paradise Valley. After returning to Kings River Cañon from the Vidette Camp, the main party started on another side trip up into Paradise Valley. The new trail via Mist Falls, which was built with funds contributed by Fresno County, the Forest Service, a transportation company, and the Sierra Club, proved of inestimable value. This trail has made Paradise Valley and the Rae Lake country easily accessible from the Kings River Cañon, and since it is the finest region thereabouts, nearly all who visit the cañon are taking advantage of it. The Club never undertook a more satisfactory piece of trail work. While the trail is somewhat rough in places, it is a splendid piece of work considering the limited funds available. A brief storm occurred while the main party was in Paradise Valley, and though it delayed the trip to Rae Lake for a day, it proved a novel experience and the wonderful cloud effects more than repaid for the temporary inconvenience. Camp was established on the shore of Rae Lake and the sentiment was unanimous that this was the finest lake region in California. The towering mountains and wonderfully colored cliffs rising from the very edge of the lake, reminded many of the beautiful lakes in the Canadian and Swiss Alps. This region, with its splendid trout fishing, is destined to become one of the famous tourist resorts of California. Members of the party discovered on the steep slope at the upper end of the lake traces of the remains of Kenneth Archibald, a daring and beloved member of the Club who lost his life while making a trip in this

vicinity in 1908. It was a relief to all, especially to his relatives, to put at rest any doubt as to the manner and place of his death.

Several members of the party knapsacked across the upper basin of the main South Fork of the Kings River and over the divide by Marion Lake, and down Cartridge Creek into Simpson Meadows and the main Middle Fork Cañon, returning by way of Granite Basin. After this delightful outing, the party returned more than ever convinced of the fact that the Kings River region is to become one of California's great attractions. Trips in future years are planned to the Middle Fork and to the Upper Basin of the South Fork and vicinity of Bench Lake.

The Club will return to the Yosemite National Park for its annual Outing in July, 1911, and take the wonderful circuit of the park that has already been announced in a preliminary circular. This trip presents an exceptional opportunity to visit Yosemite and the other grand features of the Yosemite National Park, including the Tuolumne Meadows, Grand Cañon of the Tuolumne, Hetch Hetchy Valley, etc.

The special railroad rates due to the meeting of the National Educational Association in San Francisco in 1911 will make it possible for many Easterners to take advantage of the trip.

Respectfully submitted,

WM. E. COLBY,
J. N. LE CONTE,
E. T. PARSONS,
Outing Committee.

LE CONTE MEMORIAL LODGE.

A complete report of work in connection with lodge maintenance and details of the wonderfully successful season of 1910 will be given in the June BULLETIN.

NOTES AND CORRESPONDENCE

In addition to longer articles suitable for the body of the magazine, the editor would be glad to receive brief memoranda of all noteworthy trips or explorations, together with brief comments and suggestions on any topics of general interest to the Club. Descriptive or narrative articles, or notes concerning the animals, birds, fish, forests, trails, geology, botany, etc., of the mountains, will be acceptable.

The office of the Sierra Club is Room 402 Mills Building, San Francisco, where all Club members are welcome, and where all the maps, photographs, and other records of the Club are kept.

The Club would like to secure additional copies of those numbers of the SIERRA CLUB BULLETIN *which are noted on the back of the cover of this number as being out of print, and we hope any member having extra copies will send them to the Secretary.*

Two of our Boston members, Mr. Edward W. Harnden and Mr. Herbert W. Gleason, enjoyed a month of mountaineering among the Selkirks at the headwaters of the Columbia River during September, 1910. The district, which is said to contain some of the highest peaks and most notable scenery of the Selkirks, is in great measure unknown and unexplored. Mt. Hammond (12,125), which was unsuccessfully attempted by Professor H. C. Parker last year, was conquered by a member of the party, Mr. C. D. Ellis, of Windemere, B. C., who carried an aneroid to the summit. The party was encamped at the Paradise Mine, at an elevation of 8,000 feet. A sharp ascent of 1,500 feet brought them to a lake in Clearwater basin, where the real climbing began. The first reach was a hand-over-hand climb up an almost perpendicular wall for more than 1,200 feet. "All around lay a panorama of unnamed peaks. To the north the rugged backbone rose sharply away, terminating in the magnificent head known as Mt. Hammond." The climbers followed this ridge to a height of 11,000 feet, beyond which Mr. Ellis proceeded alone. The upper reaches are of limestone, and through a crevice, which was rather hazardous owing to lack of firm footing, Mr. Ellis gained the summit. The crown, which is covered with fragments of green lime shale tinged with red iron stain, is split into almost equal parts, the south summit being a few feet higher than its fellow. Records were deposited here in a bottle by Mr. Ellis. Mt. Hammond was named in honor of the late Herbert Carlyle Hammond of Toronto, a public-spirited man who for years was interested in developing British Columbia. Mr. Gleason, who has secured some beautiful photographs of this region, writes: "There are at least seven mountains in the vicinity that out-top Mt. Hammond, and I think some may reach

over 13,000 feet. Mr. Harnden and I both agree that this is the greatest alpine country we have yet seen, and we are planning already to come back here next year."

The Alpine Club of Canada has recently established headquarters and a clubhouse at Banff. Six acres of ground have been leased from the government for forty years, and upon this is set the clubhouse and sections of tents. The clubhouse, which is a wooden structure built at an approximate cost of eight thousand dollars, includes executive offices and a huge living-room, while close at hand is a tented dining-room. They have a library, well supplied with books and maps. The tents have wooden floors and are simply furnished. The Alpine Club of Canada is only four years old, but it has already a large membership and is among the most progressive of the clubs of its kind.

MEXICO, D. F. Dec. 15, '10.

MR. WM. E. COLBY,
302 Mills Bldg., San Francisco, Cal.

Dear Mr. Colby: On December 12th I placed Sierra Club Register No. 6 on the summit of Ixtaccihuatl. The exact elevation I have not been able to obtain, as reliable data of any kind are hard to get in Mexico. It is approximately 16,200 feet.

The party consisted of Messrs. Zeamer, Van Hagen, Rivas, Cooper, and myself. We all suffered from mountain sickness; I slightly, the others severely; and Zeamer and Cooper were not able to reach the summit on that account.

I left the register in a box of heavy sheet zinc which I made especially for the purpose, but as the summit is entirely covered with snow, I am afraid it will disappear before long.

Ixtaccihuatl is the only mountain in Mexico which has glaciers on it, and it is also much more heavily covered with snow than any other. It was not so cold, however, as we had feared, and we had splendid, clear weather.

I hope to be able to climb Popocatepetl before long and leave Register No. 7 there. Sincerely yours, R. W. POINDEXTER, JR.

SAN FRANCISCO, December 5, 1910.

TO THE PRESIDENT,
THE SECRETARY OF THE INTERIOR, AND
THE SECRETARY OF AGRICULTURE,
Washington, D. C.

Sirs: We have just been informed that certain unique features of the Sierra Nevada, possessing great scientific significance, as well as remarkable scenic beauty, are in danger of being destroyed. These are commonly known as the "Devil's Post Pile" and "Rainbow Falls," situated in the Sierra Forest Reserve on the Middle

Fork of the San Joaquin River and within a few miles of its source. An application for a reservoir site for power purposes is now pending before the local officials having jurisdiction, and we are informed will be acted on in a few days. The use of such a reservoir site will result in the flooding and obliteration of the Devil's Post Pile and the possible use of the Rainbow Falls. These features were originally included within the boundaries of the Yosemite National Park, but were unfortunately excluded when the area of the park was diminished in 1905.

We feel that before any such permit be granted, the situation should be carefully examined to ascertain just how serious this damage will be, and we urge the protection of these wonderful features by the establishment of a national monument so that they may remain objects of scientific and scenic interest.

Photographs of these features are enclosed herewith.

Very respectfully,

JOHN MUIR,
A. G. MCADIE,
J. N. LE CONTE,
WM. E. COLBY,
WM. F. BADÈ,
E. C. FRANKLIN,
W. C. MORGAN,
E. T. PARSONS,
WILLOUGHBY RODMAN,
Board of Directors of the Sierra Club.
Per WM. E. COLBY, *Secretary.*

The Mazama Club Outing to the Three Sisters, in Southern Oregon, last August, proved to be of exceptional interest. The region is comparatively little known, maps are hard to find and not altogether to be relied upon, so to the great beauty of the scenery and the interest attaching to the unusual volcanic formations is added the never-failing charm of exploration. The three peaks composing the group lie close together, their dark, rugged summits encircled by glaciers of considerable magnitude. The Middle Sister, the most accessible and hospitable, boasts quite an enrollment of visitors; the South Sister, highest of the group, a little over 10,000 feet, shows scattering records of ascents during the last ten years, numbering perhaps not more than a score until our party went to augment the roll. But the North Sister, a black, wicked-looking mountain, could show only two names on one of the three pinnacles comprising its summit, and it was not until last summer that records were placed on all of its crumbling crags. The following letter from Mr. H. H. Prouty of Portland, Oregon, describes the hazardous climb that he alone

of our entire party was able to negotiate without the assistance of a rope:

"Having reached the summit of the Middle Sister shortly after 9:00 A. M., I determined to go over and explore the North Sister. It was fast and easy going down the north slope of the Middle Sister, across steep slides and snowfields in good condition for running or sliding. The head of the great Collier Glacier was crossed easily. From this point a narrow ridge ascends steeply to the base of the highest peak of the North Sister. In its first stages this was good climbing, but the last half was very badly broken, and required some ticklish work over high and very narrow pinnacles or around the steep sides of sheer cliffs. Now I was at the foot of the last peak. In front, facing south, was a broken wall of stone, perpendicular for probably a hundred feet. I studied this for some moments and tried climbing a few feet, soon giving it up as too dangerous on account of the loose rocks. On the east it was many times worse. The cliffs here extended down many hundreds, perhaps thousands, of feet, perpendicular both above and below me. Then I tried west, going down the steep slide at the cliff's base, then climbing northerly along the west side to the snowfield we had seen from camp. This was too steep and hard to cross without an ice pick, but was passed by climbing around the edge and over the top between the rock-wall and the snow. A little farther north and I began to look up again. I could see a chimney above that seemed the only possible way of attaining the summit, but below it was a very difficult climb. I gave it up at the first trial, but after determining there was no other feasible route I tried again and made it. Then came some more steep slide rock, seventy-five or a hundred feet of almost straight-up chimney work, and then, at 12:33, I was on the summit. There are two high points to this peak, apparently of equal height, both of which I reached easily once up the chimney. Returning, I went down the west side some distance, crossed a deep gorge to the north, and climbed to the north peak, which is seventy-five or a hundred feet lower than the other, I should judge. Here I found the record of R. L. Glisan and W. H. Loomis, made July 20, 1903, stating that at this point they were compelled to descend on account of the approach of a thunder-storm. I found no records on the other summits. Went home via the northwest ridge and reached Camp Riddell at 4:07."

Mr. Prouty last summer placed the Mazama box on Broken Top, a peak to the southeast of the Sisters, also, and later made a second ascent of the North Sister, guiding a party of six. An account of the 1903 ascent is published in Vol. 2, No. 4, of the *Mazama Bulletin.*

NATIONAL PARKS.

Report of the Superintendent of the Mount Rainier National Park.

ROADS AND TRAILS.

The government road, built by the Engineer Corps, United States Army, is now practically completed from the western boundary of the Rainier National Forest to a point beyond Camp of the Clouds in Paradise Valley, a distance of approximately twenty-five miles. The road has been carefully located and a grade not exceeding 4 per cent obtained. The construction of this road is a very creditable piece of engineering and has been under the immediate supervision of Mr. Eugene Ricksecker, Assistant United States Engineer. Mr. Ricksecker has been particular to see that the road passed all points of interest, and it is said to be one of the finest scenic roads in America.

The total number of visitors known to have entered the park this season to date is 7,754.

The summit of Mount Rainier was reached by 159 persons during the season just passed.

Report of the Acting Superintendent of the Yosemite National Park, 1910.

It seems to be not generally known that Yosemite Valley is open to travel all the year round, and that, while it is impracticable because of the snow to ascend any of the trails up to the rim of the valley, the principal roads are passable.

PATENTED LANDS.

There are approximately 20,000 acres of timber and homestead claims in the park, and I cannot urge too strongly the need of action looking toward the acquisition by the Government of all these patented lands.

The Sugar Pine Lumber Company, which formerly was operating forty miles south of the Yosemite National Park, is now cutting timber within three-quarters of a mile of the southern boundary, and the mountains are rapidly being denuded of all timber. This is what will happen to the timber upon all the patented lands within the limits of the park in a very short time unless they are purchased by the Government and all private rights extinguished. This is a matter which needs urgent attention and should no longer be neglected.

GOVERNMENT ROADS.

The El Portal-Yosemite Village road is the main highway into the park, and travel over it was made fairly comfortable this season by the installation of a water-sprinkling system. This system has not been quite faultless, due to an insufficient number of water stations, but the defect is recognized and the remedy found, and it will be applied early next season.

TRAILS.

All the important trails exterior to the Yosemite Valley have been repaired and those from Tamarack Flat to Aspen Valley and from the Hetch Hetchy Valley to Lake Eleanor have been materially shortened and improved. A large number of guide signs on many of these trails were put up.

An allotment was made for the construction of a new trail from above Mirror Lake to Lake Tenaya, and the trail has been completed nearly to the top of the cliff in Tenaya Canyon, all the most difficult work having been finished.

It will not be practicable to finish this trail this fall, but the unfinished portion will be easy and admit of rapid progress, so that it will be open for travel early next season and will provide a most attractive trip.

All the old trails leading up from the floor of the valley to the rim, about twenty-four miles total, are subjected every year to heavy travel and the wear and tear on them is great. They were all kept in good condition, but it required constant labor.

HOTELS AND CAMPS.

There is only one hotel in the Yosemite Valley, and it was built years ago for summer use only, possesses few conveniences, and does not even admit of being remodeled to advantage.

A new hotel in a different locality is an urgent need of the park. Mr. Frank A. Miller, whose application for the privilege of building a new hotel in the valley was approved several years ago, seems to have abandoned the enterprise.

RECOMMENDATIONS.

It is recommended: 1. That the water system and power plant be enlarged and increased; 2. That ample hotel accommodations be provided; 3. That all patented lands in the park be condemned and purchased by the Government; 4. That an appropriation be obtained for the construction of a road from Fort Monroe to Glacier Point along the south rim of the valley (when built it will be for its length one of the most remarkable mountain scenic roads in the world; the survey, location, and all other

preliminary work has been completed); 5. That an appropriation be obtained for the completion of the work of widening, straightening, improving the grade, and metaling the El Portal-Yosemite Village road; 6. That the western boundary be fenced; 7. That a permanent army post be established in the park; and 8. That a law be enacted for the government of the Yosemite Park similar to that provided for the Yellowstone Park.

WM. W. FORSYTH,
Major, Sixth Cavalry, Acting Superintendent.

REPORT OF THE ACTING SUPERINTENDENT OF THE SEQUOIA AND GENERAL GRANT NATIONAL PARKS.

FISH.

Fish were planted in a great many places this year throughout this region, and some were planted in the park waters, chiefly by Mr. S. L. N. Ellis, representing the State Board of Fish and Game Commissioners. Fishing with bait was prohibited in the park, and in some of the adjacent waters was prohibited entirely, yet numbers of places were quite fished out. The fish should not all be taken from the streams every season, as is now the tendency. The mad rush to clean up the fishing grounds can be partially checked by prohibiting fishing on selected streams at and near the bridges and at crossings of roads and trails. A valuable contribution to the park's usefulness would be the establishment of a hatchery on the Middle Fork, and an estimate has been made for an appropriation for this purpose.

ANIMALS.

Predatory wild beasts are increasing and provision should be made for their destruction. Six deer were found this summer killed by lions near the roads or trails in various parts of Sequoia Park and the footprints of lions can be daily seen in the road, though beasts of prey themselves are rarely seen. Many applications are received to hunt and trap the harmful animals. It is recommended that this be made a part of the park service by the employment of a man to do the work, or by contract. In this connection it is respectfully suggested that the department consider the propriety of arranging for organized lion hunts. Guides, hunters, trappers, packers, and cooks can be engaged in this vicinity on short notice. Lions, badgers, coyotes, foxes, wolverines, wildcats, civet cats, and skunks are increasing and their destruction of the deer and other smaller animals and game birds is a matter of serious concern. Bears give little trouble

when they are not fed and encouraged to prowl around camp kitchens. The small herd of elk is increasing. The deer are increasing and are very tame.

EXTENSION OF PARK.

The Kern-Kaweah-Kings country with its abundant water supply, good natural feed, wide range of altitudes and wild and varied conformation practically inaccessible in many places, is well suited to the propagation of game, and all this mountain country should be included in the park by reason of its comparative unimportance as a cattle range, its scant indications of valuable metals or other minerals, its extensive areas without merchantable timber or with such timber scant or inaccessible, its unsuitability for settlement or agriculture, its importance in conserving water, its groves of big trees now standing outside the parks, its unrivaled trout streams, numerous beautiful lakes, and magnificent scenery, including Mount Whitney, long held to be our highest mountain.

Report of the Secretary of the Interior.

MISCELLANEOUS RECOMMENDATIONS RELATING TO PUBLIC LANDS.

Hunting, killing or destroying game at any season of the year in any national park, national monument, or game preserve should be made a criminal offense; police jurisdiction in national parks should be conferred on United States commissioners; and section 53 of the penal code of the United States (35 Stat. L., 1908, and 36 Stat. L., 856) should be amended so as to insert therein after the words "public domain" the words, "national parks, national monuments, and other reservations." This legislation is necessary in order to protect these reservations from forest fires and to provide a penalty for failing to extinguish fires therein.

NATIONAL PARKS AND RESERVATIONS

Congress is to be commended for setting apart vast areas for national parks, over 4,500,000 acres being now embraced in national reserves of this class. John Muir is authority for the statement that Professor Hayden, above all others, is entitled to the credit of securing the dedication of the Yellowstone as a national park, for he led the first scientific exploring party into it, described it, and urged upon Congress its preservation. The creation of the Yellowstone Park by the act of March 1, 1872, marks the beginning of these national institutions which now demand more than a perfunctory policy. The setting apart and dedication of our national parks for the people is the only

practical means of preserving their wild grandeur from human desecration; "specimens of the best of nature's treasures have been lovingly gathered here and arranged in simple, systematic beauty within regular bounds."

Of the national parks that have been created by congressional action, the following are entitled to rank as worthy of being called national institutions: The Yellowstone, the Yosemite, the Sequoia, the General Grant, the Mount Rainier, the Crater Lake, the Glacier, the Mesa Verde, and there should be added the Grand Cañon of the Colorado, for the creation of which a bill is now pending in Congress. The areas of these and other parks, together with dates of establishment, are shown in the following table:

Date of Establishment and Area of National Parks.

	Date of establishment.	Area.
		Acres.
Yellowstone in Wyoming, Montana, and Idaho.	Mar. 1, 1872	2,142,720.00
Yosemite, in California	Oct. 1, 1890	719,622.00
Sequoia, in California	Sept. 25, 1890	161,597.00
General Grant, in California	Oct. 1, 1890	2,536.00
Mount Rainier, in Washington	Mar. 2, 1899	207,360.00
Crater Lake, in Oregon	May 22, 1902	159,360.00
Wind Cave, in South Dakota	Jan. 9, 1903	10,522.00
Sullys Hill, in North Dakota	Apr. 27, 1904	780.00
Platt, in Oklahoma	{ July 1, 1902 / Apr. 21, 1904 }	848.22
Casa Grande Ruin, in Arizona	Mar. 2, 1889	480.00
Mesa Verde, in Colorado	June 29, 1906	42,376.00
(Five-mile strip for protection of ruins)	do.	175,360.00
Hot Springs Reservation, in Arkansas	June 16, 1880	911.63
Glacier, in Montana	May 11, 1910	981,681.00
Total		4,606,153.85

The interest of the public in the parks has been greatly augmented of recent years, as is evidenced by the increased amount of travel thereto and the many demands for literature relating to these reservations. The interest in these national parks is not confined to the people of the United States, but extends to foreign countries. The Swiss Government, at its request, has been supplied with reports of the superintendents in charge and laws and regulations governing the various national parks. Similar information has been furnished the forestry branch of the department of the interior of Canada; also the Verein Naturschutzpark of Stuttgart, Germany, an association the object of which is the establishment of parks or reservations for the preservation and protection of the game, fauna, and flora of Germany and Austria, to be modeled after the Yellowstone National Park, though on a smaller scale. Information on the subject of the Yellowstone Park in particular has been furnished

the superintendent of the New Zealand tourist and health resorts, the United States consul at Sydney, New South Wales, for the information of the secretary of national parks in that country, and the secretary of the Royal Geographic Society of Australasia at Melbourne, Victoria.

In view of the facility of reaching our national parks from the Atlantic and Middle West States, through improved rail connections, and the convenience of travel by tourists through them, which is being rapidly improved, the comment is a natural one, "Why do so many of our American people spend their time and money touring abroad without knowing their own country?" The scenery and natural wonders found in other countries frequented by our people are insignificant compared with that of our great national parks and the mountain ranges in which they are found.

It has been broadly estimated that over $100,000,000 has been spent in some years abroad by American tourists; only a fraction of this amount is spent by Americans in visiting the great American parks and resorts.

One of the advantages of popularizing the national parks by eastern tourists would be the display of greater interest in their improvement by Congress, in liberal appropriations to increase their accessibility by roads and other establishments for public convenience and pleasure.

The Wind Cave National Park, containing 10,522 acres; Sullys Hill National Park, containing 780 acres, and Platt National Park of 848.22 acres, created by Congress at different times, may be said to be local parks having no sufficient national characteristics to warrant their development as such. The policy should be, in my estimation, to retain none of the national parks heretofore dedicated which will not warrant development as national institutions as distinguished from municipal or state parks or resorts. If it is desired that they be retained for public purposes and so improved, I would recommend that they be conveyed to the States for that purpose.

As regards the national parks which have been created and are capable of development as national institutions, a definite policy for their maintenance, supervision, and improvement should be established, which would enable them to be gradually opened up for the convenience and comfort of tourists and campers and for the careful preservation of their natural features. Complete and comprehensive plans for roads, trails, telegraph and telephone lines, sewer and water systems, hotel accommodations, transportation, and other conveniences should be made for each of the national parks before any large amount of money is expended. The treatment of our national parks, except as regards

the Yellowstone, has not had heretofore the benefit of any well-considered or systematic plans. In all of them the road and trail problems for public travel and convenience to enable tourists to obtain the benefits of scenic beauties are primary, but sewage, water, and electric-power problems are after all of equal importance.

The patrol of the national parks is also a matter of prime importance in their supervision. The system of maintaining regular troops in the Yellowstone, Yosemite, Sequoia, and General Grant parks has proved entirely satisfactory as a method of patrol. The moral effect of the troops in protecting against malicious mischief and enforcing regulations, and the saving of expense in administration by their use, justify their assignment. I believe, however, that civilian superintendents should have charge of the administrative government of all of the national parks, with military supervision confined to the enforcement of regulations pertaining to public travel and preservation of game and natural curiosities. Outside of the Yellowstone National Park the administration of all of the parks is embarrassed by the fact that they contain within their bounds certain areas of private lands, which should be acquired by the Government, and all private interests, including toll-roads, extinguished. The private holdings are as follows: Yosemite National Park, 19,827 acres; Sequoia National Park, 3,716.96 acres; Wind Cave National Park, 160 acres; Crater Lake National Park, 1,337 acres patented land, and 1,121.11 acres unperfected bona fide claims; Mesa Verde National Park, 400 acres patented lands and 480 acres unperfected bona fide claims; Mount Rainier National Park, 18.2 acres patented lands; Glacier National Park, 8,864.40 acres patented lands and 7,803.71 acres unperfected bona fide claims.

In order that creditable progress may be made in each of the national parks, after the development of all necessary plans for road and other construction for the convenience of travel and tourists, liberal appropriations will be required and a departmental organization for administrative purposes perfected, capable of efficient field administration and of careful inspection of all public work and the conduct of concessionaires. It will doubtless be necessary in the accomplishment of these purposes to create a bureau of national parks and resorts, under the supervision of a competent commissioner, with a suitable force of superintendents, supervising engineers, and landscape architects, inspectors, park guards, and other employees.

The creation of such a bureau and the planning under it of a consistent and broadly considered scheme for national parks

and resorts to fit the future needs of the United States of America would be in line with the policy under which our first president planned, in 1803, the federal city which now bears his name, without which planning no such civic convenience, beauty, impressiveness, and national dignity as the city of Washington now enjoys would have been possible.

The volume and importance of the work of the supervision of the national parks and resorts under the Secretary of the Interior has passed beyond the stage of satisfactory control by operations carried on with the small force available in the secretary's office.

Additional road construction is greatly needed in the Yosemite, Sequoia, and General Grant national parks, in California; Mount Rainier National Park, in Washington; Crater Lake National Park, in Oregon; and the Mesa Verde National Park, in Colorado. A carefully planned sewer system is necessary in the Yosemite National Park, as well as increased water and electric power facilities.

During the past year a uniform method of accounting relating to concessionaires in all of the parks has been established and a material increase made in the receipts for the privileges enjoyed by them. It is worthy of comment that the receipts for 1910, in round numbers, were $51,000, as against $22,000 in 1909.

In all of the parks, except the Yellowstone, great difficulty of administration is encountered from the fact that the department has no jurisdiction to punish offenses in violation of its regulations, and I therefore recommend that jurisdiction be given to the department over all offenses, with a provision of suitable penalties for the violation of the regulations of the department, for the protection of game, and to prevent destruction or injury to government property.

In the Mount Rainier, Crater Lake, General Grant, and Wind Cave national parks automobiles have been allowed entrance under license and strict regulations pertaining to travel upon the roads. It is believed that in a measure this privilege may be extended to some of the other national parks without jeopardy to the traveling public.

In some of the national parks mining locations are permitted, but the tendency is to abuse the privilege in order to secure rights which will ultimately have to be bought out by the Government. The department is now exercising the strictest vigilance to prevent speculative locations from ripening into patent or a vested right.

I believe that in the administration of our national parks it may be feasible to use for guides, and possibly for guards in a

limited sense, intelligent Indians, and an effort will be made to give them such employment where they can be used to advantage.

The following table shows the number of visitors entering the national parks and resorts during the last five years:

Visitors to National Parks, 1906 to 1910.

Name of Park.	1906.	1907.	1908.	1909.	1910.
Yellowstone National Park	17,182	16,414	19,542	32,545	19,575
Yosemite National Park	5,414	7,102	8,850	13,182	13,619
Sequoia National Park	700	900	1,251	854	2,407
General Grant National Park	900	1,100	1,773	798	1,178
Mount Rainier National Park	1,786	2,068	3,511	5,968	8,000
Mesa Verde National Park	(a)	(a)	80	165	250
Crater Lake National Park	1,800	2,600	5,275	4,171	5,000
Wind Cave National Park	2,887	2,751	3,171	3,216	3,387
Platt National Park	(a)	28,000	26,000	25,000	b25,000
Sullys Hill National Park	(a)	400	250	190	190
Hot Springs Reservation	(a)	(a)	(a)	(a)	120,143

a No record kept. b Estimate.

HETCH HETCHY VALLEY PERMIT.

In February of this year I issued a citation to the mayor and supervisors of the City and County of San Francisco to show cause why the Hetch Hetchy Valley and reservoir site should not be eliminated from the permit theretofore granted to the city on the 11th day of May, 1908, for a water supply for said city and county. A board of army engineers, at my request, was detailed by the Secretary of War, at your instance, as advisory to the Secretary of the Interior in the disposition of this question. Upon considering the application of the city for the extension of time to secure further data, a continuance was granted for this purpose for one year, and the board of engineers was authorized to receive such data as may be furnished by the city to establish its claim for the necessity of the use of the Hetch Hetchy site and to secure such other necessary data as they may deem advisable. An appropriation in the sum of $12,000 was granted by Congress to defray the expenses of this board. The details of this hearing are fully set out in the published proceedings had before the Secretary of the Interior in May, 1910.—*From Annual Report of Secretary of the Interior for Year 1910.*

SIERRA CLUB STATIONERY.

The official die of the Sierra Club is now at the store of Paul Elder & Co., 239 Grant Avenue, San Francisco, who are prepared to execute orders for Club stationery.

TROUT PLANTING.

The following correspondence gives evidence of the important work that has recently been accomplished in the High Sierra in the planting of trout in fishless lakes and streams. The Club took up this work several years ago, realizing its value, and it is deeply indebted to the California Fish and Game Commission for most effective co-operation. In a very few years the regions planted will become a veritable "fisherman's paradise." Members of the Club and all lovers of sport are urged to refrain for a period of three years from fishing in the lakes and streams noted as having been planted this past year.—THE EDITORS.

TRANSPLANTING ADULT TROUT IN THE SOUTHERN SIERRAS.

During the past two years special attention has been given to stocking barren lakes and streams on both sides of the higher Sierras in Inyo, Tulare, Kern, and Fresno counties with adult fishes—golden, Kern River rainbow, and Loch Leven trout. The two last-named varieties were taken from waters that had been stocked some years before with fry raised at our Sisson Hatchery and which had been transported as far inland as it could be done with safety. The golden and Kern River trout were taken from streams where they are abundant and placed in other waters barren of fish life in the same general locality.

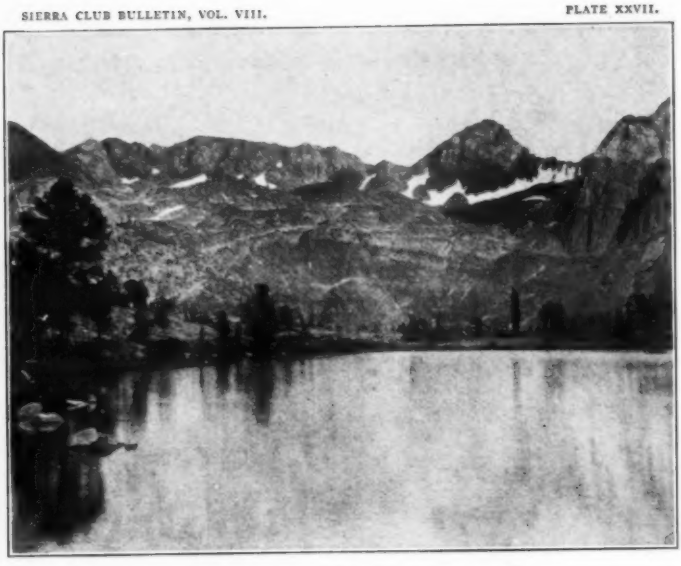
The sum of $1,250.00 was appropriated for the work, which enabled us to equip two pack trains with specially built cans, and other necessary apparatus. Deputy E. H. Ober, assisted by Sheriff Naylor of Inyo County, had charge of the work on the eastern slope, and in the face of many difficulties successfully transferred a large number of golden trout into waters heretofore barren of fish life, but rich in fish food.

District Deputy A. D. Ferguson of Fresno, assisted by Deputy S. L. N. Ellis, directed the pack train work in 1909 and 1910 in the Kern River, Kings, and Kaweah basins on the western slope. Adult golden trout were captured in very satisfactory numbers and successfully transported and planted into Crabtree Fork of Big Kern, North Fork of Kaweah River, and Whitney Creek. Adult rainbow trout were planted in four tributaries of Sugar Loaf Creek and other tributaries to Kings River in 1909. In 1910 Huckleberry Ellen and Spotted Fawn lakes, in Tuolumne County, received 1,400 adult rainbow trout. Adult Loch Leven trout were placed in Rock Creek; Loch Leven fry in eighteen cans distributed by pack trains in Pitman, Coyote, Red Mountain Bear, Shaver, and seven Dinkey lakes.

Adult rainbow trout were taken and distributed in considerable numbers into South Fork of the San Joaquin above Jackass

FIN DOME FROM RAE LAKE, 1910.
Photograph by C. W. Pohlman.

RAE LAKE IS CHARMINGLY DIVERSIFIED BY PENINSULAS AND ISLANDS, 1910.
Photograph by H. E. Bailey.



COLORED LADY FROM RAE LAKE, 1910.
Photograph by Mabel Sykes.

THE MASSIVE MAJESTY OF SNOW-CAPPED PEAKS, RAE LAKE, 1910.
Photograph by H. E. Bailey.

Falls and four other headwater tributaries of the same stream. Sixteen tributaries of the Kings River, including lakes and streams in Granite Basin, received liberal plants of adult fish. All are ideal trout waters, but heretofore barren of fish life. It is confidently believed that this vast region will in a few years become a fisherman's paradise.

Much credit is due to the officers and members of the Sierra Club, who, under the skillful directions of Secretary Wm. E. Colby, have at their own expense, but under the authorization of this Board, successfully transplanted during the past two years more than 400 adult golden trout in the vicinity of Mount Whitney.

In July and August, 1910, more than 1,800 large golden trout of the two varieties were taken with hook and line by our deputies and distributed among twenty-three lakes and streams in which no fish have heretofore existed. In suitable places—meadow streams—seines were used to take the fish, but by far the larger number were taken with hook and line.

Some idea of the arduous character of the work is shown by the plants made in Deadman's Cañon, which occupied six days of pack-horse travel over a very rough country. The fish were true type, *Salmo Roosevelti,* taken with seine at Whitney Meadows and planted with the remarkably low loss percentage of six fish out of 183, all adults.—*Twenty-first Biennial Report of the Board of Fish and Game Commissioners of the State of California, 1910.*

San Francisco, September 8, 1910.

Honorable Board of Commissioners,
California Fish and Game Commission,
Merchants Exchange Bldg., San Francisco.

Gentlemen: I desire to express to your Honorable Board, on behalf of the Sierra Club, our very great appreciation of the splendid work which has been done in the field by your representatives this year toward the planting of hitherto fishless lakes and streams in the High Sierra region. We have been especially interested in seeing the golden trout spread over a considerable territory, and we are particularly pleased to learn of the splendid work that Mr. Ellis has done in the Kern River region, under the direction of Mr. Ferguson.

I have already had some correspondence with your deputies with reference to one additional planting which we are very anxious should be made. This is to take golden trout from Golden Trout Creek at Whitney Meadows and plant them in the branch of the South Fork of the Kings River just below Center Basin, a stream which we examined this year and found ad-

mirably adapted to fish life, and one in which I think the golden trout will retain all their wonderful color, because of its similarity to their native stream. While this plant is being made, I think it would be a comparatively easy matter to also have some of these golden trout taken over Taboose Pass and planted in some of the lakes and streams about the headwaters of the main South Fork of the Kings River. If your Commission will authorize Mr. Ober to do this work, I feel sure that he will be only too glad to undertake it. Our Club has promised to assist in a financial way, but the funds at our disposal are very meager indeed and would only pay a small part of the cost of the work. Our Club will appreciate it if you will authorize this to be done at once, as the season will not long permit the necessary crossing of the mountains.

Assuring your honorable body that our Club stands ready at all times to assist you in your splendid work of stocking the lakes and streams of the High Sierra, I remain,

Very truly yours, WM. E. COLBY.

BIG PINE, INYO COUNTY, CAL., October 4, 1910.

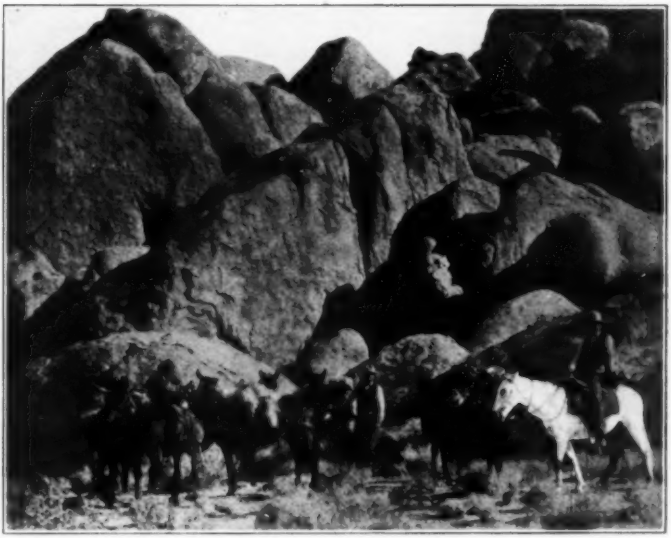
WM. E. COLBY,

Secretary Sierra Club, San Francisco, Cal.

My Dear Sir:—I beg herewith to submit for your consideration a condensed report of my trip to Volcano Creek, the securing there of a quantity of *Salmo Rooseveltí* (golden trout) and the planting of the same in accordance with plans outlined by your Club and the State Fish and Game Commission in the waters of Center Basin, Bench Lake, and the South Fork of Kings River.

I cannot resist the temptation of prefacing this report with a few words of merited praise for your Sierra Club and its ever willing co-operation with that prime achiever of results, the State Game and Fish Commission. I plead guilty to a modicum of prejudice of opinion, but I honestly believe that there is no enterprise or working body or commission in our State that is in a better position to do, or that actually does accomplish more of real good for the people than does our Fish and Game Commission, ably assisted, however, by your Sierra Club and other organizations who make trips into the High Sierras each year and take interest in the stocking of heretofore fishless waters; this one feature, aside from your deep interest in the National forests should be and is taken as evidence of your endeavor toward the upbuilding of that which will in the future years inure to the good and welfare of the people and of the country. It is pleasant to feel that in the Sierra Club, at least, we have a

DEVIL'S SLIDE NEAR LITTLE COTTONWOOD, HOCKETT TRAIL, 1910.



NIGGER TRAIL ROUTE TO INDEPENDENCE.
Photographs by Geo. W. Hall.

HEADWATERS OF GOLDEN TROUT CREEK, 1910.

NEAR KEARSARGE PASS, 1910.

Photographs by Geo. W. Hall.

coadjutor that takes an active interest in what future generations will point to as work well done; every dollar that your Club expends in a work such as this must bring good results somewhere, sooner or later. Fish and game when properly understood and conserved become a valuable asset, both from a utilitarian standpoint and as an attraction to any community or country.

The State Fish and Game Commission is to be congratulated in having such an ally as the Sierra Club, an organization that takes an active interest in everything pertaining to the upbuilding of the fish and game interests of our great commonwealth, and in this respect your work and assistance cannot be overestimated. Let me thank you and your Club on behalf of the Commission and the people of Inyo County, both of which it is my honor to represent in this matter, for your kind and thoughtful consideration of this section; Inyo County is fast becoming noted for its sporting facilities and more people resort here annually for the fishing and hunting; in the near future, when the railroad from the south connects with us, we expect to see a still larger yearly influx of pleasure seekers and campers who will avail themselves of the many unsurpassed opportunities and natural facilities here.

On my trip for the golden trout I had with me excellent assistants in Mr. S. G. McMurry and Mr. Geo. W. Hall, both of this place. Our outfit consisted of four pack mules and three saddle horses. The fish were packed in four ten-gallon milk cans and our start was made from Big Pine on the morning of September 19th under perfect conditions. We reached Independence, twenty-eight miles south, on the evening of the same day and outfitted there for the trip. At this particular time of the year, especially in the high altitudes, the forage for stock is rather meager and we found it necessary to pack one mule with grain. On the morning of the 20th we left Independence after getting some of our stock shod and passed through Lone Pine, stopping there for lunch. I desire to state here that we paid each town along our route the courtesy of our patronage, so far as possible. The night of the 20th we lit our first camp-fire at the Lubkin ranch, eight miles southwest of Lone Pine; on the morning of the 21st, at 6:00 A. M., we started over the Hockett trail, arriving at Volcano Creek at 6:30 P. M., after a very rigorous and hard trip on both stock and men. The Hockett trail is by no means a good one, and seems to me to have been built in a place where the Almighty never intended that there should be a trail, but had neglected to advertise the fact.

On the morning of the 22d we proceeded to turn a small por-

tion of Volcano Creek. In this some little difficulty was experienced, but after some quick and hard work along with a good ducking for all of us the task was accomplished. By turning the stream in this fashion one may select the deep pools, bale them out with a bucket and in this manner one is enabled to secure just the desired size of stock fish. My selection of fish were from two to five inches in length, and we took in all about 750. Screens were placed over the cans and for the night the cans rested in the creek. The obstruction in the creek consisted of ten sacks of sand, a large canvas and a hat and one rubber boot, belonging to one of my assistants. When these were removed the little stream of Volcano Creek pursued its accustomed course as though there had been no molestation. Golden trout in this particular branch are in evidence in countless numbers, but as a rule they are rather small. I shall make no attempt, except in a brief way, at this time to speak of the geological formation around and about Volcano Creek. However, I examined the sand, pebbles and rock in the creek bed and found the sand to be of a fine grained gray granite mixed with a cement or limestone. The entire Volcano Creek passes over thousands of red malapai stones of small size; the source of the stream is a subterranean channel of clear, cold water of about 300 inches; the formation, as a whole, surrounding this particular section, for quite a distance south and east, is of a peculiar calico-tinted conglomeration in which red predominates. Stratas of conglomerates and quartzite may also be seen, apparently the only sedimentary rock formed before the uplift took place in that locality. There are a great many people throughout the country who are of the opinion that the golden trout will change color in environments other than those to which they are native, and this transplanting should either verify or dispel that conception, as the surrounding colors and formations where the fish were placed are as diametrically different as could be imagined.

On the 23d instant, at 6:20 A. M., we left Volcano Creek on our return trip and stopped for a late lunch and to rest the fish at Big Cottonwood Creek. From here we proceeded to Carroll Creek, a small stream of clear, cold water at the base of the mountain on the east side and where the Hockett trail leading toward Monache begins; we camped here for the night, and upon looking into the cans the next morning we found three small dead fish, which had in all probability been bruised in the catching the day before. We left Carroll Creek at 5:30 A. M. and arrived at Independence at 3:00 P. M. of September 24th, and stayed there for the night. On our journey to Independence we

CROSSING KEARSARGE PASS, 1910.

CROSSING TABOOSE PASS, 1910.

Photographs by Geo. W. Hall.

NEAR CENTER BASIN AT BASE OF CENTER PEAK, JUNCTION PEAK IN DISTANCE, 1910.
Photograph by Geo. W. Hall.

kept close to the base of the mountains so that we could frequently cross the various streams that flow clear, cold water and in this way avoided the necessity of packing ice. Again we saved eight or ten miles of travel by leaving Lone Pine to the east and traveling what is commonly known as the "Nigger" trail.

At Independence we unloaded our fish at the courthouse, where Sheriff George Naylor had made excellent arrangements for the keeping of the fish. The sheriff and his deputies commanded our sincere gratitude for the able and willing assistance furnished our expedition by them.

We left Independence on the morning of the 25th at 7:30 A. M. for Center Basin, over the Kearsarge Pass, leaving one mule and two cans of fish at Independence. We stopped for a short rest at Flower Lake, well up toward the summit of the pass; continuing we arrived at Vidette Meadows at 6:15 P. M. with no further loss of fish. On the morning of the 26th, at 5:20 A. M., we loaded the fish upon one of the mules and made our start for Center Basin. In the creek well up toward the basin we made eleven plants all told, as indicated on the map that I am returning to you. We used about 400 of the fish in these eleven plantings. Directly the little fellows were liberated they got busy catching the several different flies and bugs that chanced to fall upon the water, thus showing that they were both in good order and spirits, and hungry. They had attempted to eat some of the very few that were dead in the cans.

After finishing our planting at Center Basin we returned to camp, repacked and started for Independence, arriving there at 6:00 P. M. On the morning of the 27th, at 7:00 A. M., we picked up the cans left at Independence and proceeded up Taboose Creek, camping that night near the summit line with a loss of five small fish. On the morning of the 28th, at 5:30, we left for Bench Lake and the headwaters of the South Fork of Kings River. In these waters we made eight plantings, five in the river and three in the lakes, as is also indicated on the maps.

On the morning of the 29th we started for home, arriving at 8:00 o'clock P. M., thus ending one of the most successful fish planting expeditions that has ever been attempted in this section. We feel like assuming a little extra credit to ourselves for the success of our expedition from the fact that the undertaking contemplated necessitated the crossing of three Sierra summits, the traversing portions of Inyo, Tulare, and Fresno counties, and the covering of more than 248 miles, and the keeping and caring for some of the fish for a period of eight days after they were caught and placed in the cans. My loss on the entire trip would not reach fifteen fish out of the 750 or upwards. The trip

was accomplished with never a slip backward, due largely to the efficiency of my two assistants, men who understand the exact carrying out of instructions. Our efforts during the entire trip were directed toward the incurring of no unnecessary expense, looking always toward the completion of the work as thoroughly and quickly as possible and in this respect I think that we have made good. Trusting that the knowledge that this work has been thoroughly and well done may afford yourself and the Sierra Club an equal degree of satisfaction with that we have derived from its accomplishment in such manner, I beg to subscribe myself, Most sincerely yours,

E. H. Ober,

Deputy of California Fish and Game Commission.

Big Meadows, August 26, 1910.

Mr. W. E. Colby,
Secretary Sierra Club,
San Francisco, Cal.

Dear Mr. Colby: I am back as far as this and am awaiting instructions from my superiors. I got the letter that you left at Rock Creek, but did not find it until the 18th of July,—in fact, not until I had taken a load of fish to the pass west of Junction Peak. I was not prepared to make the trip over, so I planted the fish at various points that were barren.

We continued planting until all streams south of Harrison Pass, on the east side of Kern, to Rock Creek were planted. We also planted several lakes. I have found from past experience that it is useless to plant a lake with golden or rainbow trout unless the lake has an inlet to serve as a spawning bed. The Loch Leven and German brown spawn in open, shallow water of lakes, but the other varieties must have running water. My work as outlined at the branch office did not permit me to go around via Lone Pine and Kearsarge Pass with fish for the Upper Bubbs Creek, so I sent your letter to Mr. Ober and asked him to help you out if possible.

We carried one hundred and thirty golden trout from Upper Whitney Meadows and released them in the head of the West Fork of Roaring River. We usually call the stream Deadman's Cañon, but the U. S. Quadrangle gives the name as Copper Cañon. We traveled via Elizabeth Pass. We also planted thirty trout at Lone Pine Meadows and fifteen in Lone Pine Creek above the falls.

In another year I hope we can continue the work until all barren waters are stocked, and I wish to thank you for your in-

STEEP WALL RISING OUT OF BENCH LAKE, 1910.

ANOTHER VIEW OF BENCH LAKE, 1910.
Photographs by Geo. W. Hall.

RAE LAKE BASIN FROM FIN DOME RIDGE, 1910.

LOOKING DOWN RAE LAKE BASIN, 1910.
Photographs by E. T. Parsons.

terest and assistance given. I brought some of the trout from Little Kern and have two plants in streams near here.

I will probably be in the mountains a few weeks longer and then will be at Fresno. If it is of any interest to you I will arrange a map and forward it to you showing exactly where we planted golden trout.

Again thanking you kindly,

Very sincerely,

S. L. N. ELLIS.

FRESNO, January 18, 1911.

MR. W. E. COLBY,

Secretary Sierra Club, San Francisco, California.

Dear Mr. Colby: In reply to your letter of December 30th, inclosing maps:

I am now sending you a report of the work accomplished, also map showing the locations of the plants made with golden trout. The successful planting of Copper Cañon Creek is a source of great pleasure to me, for I've annually hoped to do that for the past ten or twelve years. This task took six days from the Upper Whitney Meadows and in climbing the mountain from Lone Pine Meadow up Lone Pine Creek, it took two hours and forty minutes to cover a distance of about one half of a mile. Nearly every pack mule fell with his load and we had to carry the cans ourselves. In my past summer's work I was assisted by two boys, E. C. Ferguson and Ray C. Ellis. They were ready and tireless in assisting me in the successful work.

The plant in Copper Cañon will furnish us an easy supply of golden trout to further distribute in the barren waters of Kings River, hence its great importance.

The past summer was not an ideal one for fish planting in the very high altitudes on account of the frequent and very hard summer storms.

We now have plants in easy reach of the unplanted waters of the Big Kern, and as soon as they multiply sufficiently to allow taking them, we hope to finish planting all barren waters east of Big Kern with golden trout.

I want to thank you, also the Sierra Club, for the keen interest manifested by you all in our work, and hope that our hopes and desires may all come true. Very sincerely yours,

S. L. N. ELLIS,

Deputy Fish and Game Commissioner.

Photographs by E. T. Parsons.

FRESNO, CAL., January 5, 1911.

MR. WILLIAM E. COLBY,
San Francisco, California.

My Dear Mr. Colby:—In response to your request of December 30th, I take pleasure in enclosing you tabulated list of golden trout plants, and also plants of rainbow, Loch Leven and Eastern brook trout made through this office during 1910.

In this connection, I wish to say that both Deputy Ellis and Deputy Hughes did splendid work. Much of the country they worked in was rough in the extreme. On Ellis's trip with golden trout for Cloudy River, or Deadman's Creek, he frequently had to cut a trail through brush and often had from one to three pack mules down because of the extremely bad going. In traveling on this trip he adopted a plan of keeping the fish on the pack mules but six hours a day, which probably accounts for his small losses.

I was with Deputy Hughes part of the time and can testify to the strenuous character of his labor. In one instance we were compelled to slide the loaded mules a hundred feet down a slick rock, in order to get to the North Fork of Kings River where we wished to make our plant.

This office will probably be able to continue the work until every stream and lake in our mountains shall have been stocked with desirable trout.

I understand from Deputy Ober of Inyo, that he had already reported to you his golden trout work.

Yours respectfully, A. D. FERGUSON,
In Charge, Branch Office.

TROUT PLANTS MADE DURING 1910 BY BRANCH OFFICE, SAN JOAQUIN AND KINGS RIVER WATERS.

June 10th—A. D. Ferguson in charge, field work—Loch Leven fry were released in Pitman Lake, Coyote Lake, Red Mt. Lake, South Fork San Joaquin watershed; Bear Creek Lake and seven other lakes connecting to Dinkey Creek.

June 14th—Kenneth Hughes in charge field work—Eight cans of Loch Leven and Eastern brook were released in Shaver Lake and streams tributary to the lake.

June 17th—Two cans, one Loch Leven and one Eastern brook, were released in Dinkey Creek near old Silver City.

June 18th—Two cans Eastern brook fry were released in Helm Creek, which is tributary to the North Fork Kings River.

June 20th—Rock Creek was stocked with adult Loch Levens taken from Dinkey Creek.

The following plants were made with adult rainbow in waters which were barren:

July 16th—Crown Creek, tributary Middle Fork Kings River; Dry Meadow Creek, Bear Creek.

July 24th—Head of Crown Creek, tributary Middle Fork Kings River; Statham Creek, tributary North Fork Kings River; Rancheria Creek, tributary North Fork Kings River.

July 26th—Head North Fork Kings River.

August 2d—Post Corral Creek, tributary North Fork Kings River.

August 10th—Blue Cañon Creek, tributary Middle Fork Kings River.

August 14th—Head of Dougherty Creek (Middle Kings waters).

August 15th—Cartridge Creek (Middle Kings waters).

August 16th—South Fork Dougherty Creek (Middle Kings waters).

August 16th—Middle Fork Dougherty Creek (Middle Kings waters).

August 16th—Lake at head of Granite Basin and Creek flowing from lake. South Fork Kings River waters.

August 21st—Head of Copper Creek (South Fork Kings waters).

September 3d—South Fork of San Joaquin River, above Jackass Falls.

September 4th—North Fork of South Fork of San Joaquin in French Cañon.

September 7th—Middle Fork of South Fork of the San Joaquin; this stream is sometimes called Evolution Creek.

Fry from the State Hatchery were delivered as follows:

June 16th—Fourteen cans at Lemon Cove to Widgeon Gun Club to release in the three forks of the Kaweah; twelve cans to Porterville Fish and Game Club, Tule River; twelve cans to Deer Creek Fish and Game Protective Association, to release in Kessing Creek and Deer Creek.

June 17th—Twelve cans fry to H. T. Dillon, Bakersfield, to Cedar Creek; four cans to R. E. Galloway, Bakersfield, to Basin Creek; four cans to Thos. O'Brien, Bakersfield, to Ft. Tejon Creek; four cans to A. F. Stner, Bakersfield, to San Emidio Creek.

Work was done by Deputy S. L. N. Ellis of the Branch (Fresno) Office Fish and Game Commission. A. D. F.

Golden trout plants during the months of July and August, 1910:

Stock taken with hook and line from Rock Creek, and eastern tributary to Big Kern.

July 16th—Guyot Creek and Perrin Creek, also 357 fish scattered in Rock Creek from the crossing on the Mt. Whitney trail eastward to lake where Mr. W. E. Colby made a plant two years ago.

July 19th—Small creek and lake south of the East Fork of Kern River and tributary to South Fork of East Fork Kern River.

Main East Fork of Kern River and about one mile north of where Harrison trail crosses the stream; this stream heads near the south slopes of Mt. Tyndall.

July 22d—Lake, near trail and between high sandy plateau and Tyndall Creek.

July 25th—Released 157 fish in Whitney Creek, between the Upper and Lower Crabtree Meadows.

July 26th—Lake near pass on western slopes of Tyndall Creek and east of divide which separates Tyndall Creek from head of Big Kern.

July 29th—Stream which connects to Whitney Creek at Lower Crabtree Meadows. This plant was made above the falls and near the lake.

July 30th—Both branches of Tyndall Creek, above junction of streams; also lake at foot of pass on Harrison Pass trail and between Tyndall Creek and head of Big Kern; also Lake South American.

The stock used were taken with hook and line from Rock Creek and all waters planted are eastern tributaries to Big Kern and north of Rock Creek. (Roosevelt variety.)

August 6th—Planted Lone Pine Creek, a tributary to Middle Kaweah.

August 8th—Made two plants in the head of *Deadman's Cañon;* also one plant in the Middle Kaweah and above Lone Pine Camp. *Deadman's Creek is the* WESTERN *tributary* to Roaring River, which is a southern tributary to South Fork of Kings River. Stock used were golden trout (*Roosevelti*) taken with seine at Whitney Meadows.

This highly successful plant is notable in that the fish were six days on pack mules, with loss of only six fish out of 183.

Most of the journey was over very rough country without trails. Deputy Ellis had a very strenuous time. A. D. F.

GOLDEN TROUT (WHITE VARIETY).

August 13th—Freeman Creek from near Soda Springs to foot of the hill on Nelson trail.

August 15th—Freeman Creek, near summit on Nelson trail; also two plants in Peppermint Creek, one at Peppermint Meadows and the other at Holtby Meadows near the summit of

mountains and above the falls. (Stock secured at Fish Creek Meadows with seine.) Freeman Creek is a tributary to Little Kern, and Peppermint Creek is a western tributary to Big Kern.

August 22d—Planted Clover Creek.

August 23d—Boggy Meadow Creek, both streams with golden trout (white variety taken in Little Kern with hook and line). Clover Creek is a tributary to the Marble Fork of Kaweah and Boggy Meadow Creek, tributary to Boulder Creek (Kings River water).

RAINBOW PLANTS.

August 28th—Elam Creek and head of Boulder Creek.

August 30th—Fox Meadow Creek, the last three plants are all tributary to Boulder Creek. Stock used were secured in Big Meadow Creek with seine.

SAN FRANCISCO, January 10, 1911.

DR. DAVID STARR JORDAN,
Stanford University, Cal.

My Dear Dr. Jordan: I am very anxious to hear what you have to say about the trout* which I secured in the Kern and sent down by Professor Franklin, when you have time to examine it. This trout had none of the golden color whatsoever; its sides and belly were a deep rusty brown and its general color a sort of sooty gray.

I do not think that you will find it to be the *Gilberti*, for I am very familiar with that trout, of course, but it is a trout that is almost lacking in scales and in spots, except on the tail and dorsal fin as the golden trout is marked. In my opinion it is a form of the golden trout which has entered the Kern from Golden Trout Creek and then traveled up to its headwaters, changing its color entirely because of its environment. Very truly yours,

WM. E. COLBY.

STANFORD UNIVERSITY, CAL., January 30, 1911.

MR. WILLIAM E. COLBY,
Sierra Club, San Francisco, California.

Dear Mr. Colby: The fish which you sent me is *Salmo Roosevelti*. It differs from the type only in lacking the bright red colors. It is very interesting because we have long wondered what the color of these fishes would be under another environment. But I am unable to see how this species of Evermann, *Salmo Roosevelti*, differs from the original, *Salmo aguabonita*. The *Salmo Whitei* is evidently different. Very truly yours,

DAVID STARR JORDAN.

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*This specimen was secured in the Kern-Kaweah River very close to its junction with the main Kern. See Vol. VII, pp. 56-57, SIERRA CLUB BULLETIN.

FORESTRY NOTES

From the State Board of Forestry.

Studies of eucalyptus jointly conducted by the Federal Forest Service and this office and embodied in a bulletin in December fail to bear out assertions regarding growth made by promotion companies. Companies have claimed 100,000 board feet grown in ten years. The best yield shown by our measurements was 57,820 board feet in a grove thirty-two years of age. The bulletin serves as a check on exaggerated statements.

The State Forester's biennial report asks for an appropriation of $50,000 to be expended in fire protection after the organization of a system of co-operation between State, counties, and individuals. The money will be expended in providing patrols and in paying the State's share of expenses in combating fires.

Two companies of coast artillery from the Presidio at San Francisco did splendid work in fire-fighting at Foresthill, Placer County. They were the first troops moved from a distant point to a fire in this State.

The Legislature will be asked to pass laws enabling this office to take charge of forest areas where fire danger is acute. The burning of slashing will be closely regulated if this provision is made.

The Third Biennial Report of the State Forester of California, Mr. J. M. Homans, is a creditable piece of work. The problems of forest protection and management are discussed in a very interesting way. Numerous excellent photographic illustrations give emphasis to the text. A copy of the report may be obtained by addressing the office of State Forester, Sacramento, Cal.

From the United States Forest Service.

The very disastrous forest fires of last autumn have aroused renewed interest in the problem of forest protection. Probably the best treatment of the subject which has appeared will be found in the form of a series of articles in *American Forestry*, by Henry S. Graves, U. S. Chief Forester.

A lumber company engaged in cutting National Forest timber in the Sierra has recently agreed to cut all unmerchantable, diseased trees and old snags in the line of their operations. In con-

sideration of the expenditure involved in this work, the company has been granted a slight concession in stumpage rates. Old snags, if left standing, are a menace in time of fire, since sparks are thrown for hundreds of yards from their tops as from a chimney. Trees affected with fungus diseases tend to spread such diseases to other healthy trees in the forest. By all those interested in the protection and improvement of our magnificent Sierra forests, this will be recognized and welcomed as a decided step in advance.

The Forest Service is now advertising for sale one billion feet of timber along the Hayfork and South Fork of the Trinity River in Trinity County. The Humboldt & Eastern Railway Committee of Eureka, California, has been instrumental in placing this timber on the market in order to make possible the construction of a railroad from Eureka to the vicinity of Red Bluff, on the main line of the Southern Pacific Railroad. This road, if constructed, will hasten the development of one of the most thinly settled and undeveloped regions of the State, a region offering great attractions to those who spend their summer outings in our forests.

This is by far the largest amount of timber ever offered for sale by the Forest Service. Special concessions in stumpage rates and length of time allowed for removal of the timber have been approved by the Secretary of Agriculture in order to make the building of the proposed road feasible.

Over 6,000 pounds of tree seed has been collected this fall by the Forest Service upon the National Forests of this State. This seed is being sown by the forest rangers upon natural forest land which, owing largely to repeated fires, bears no seed trees at present, and, therefore, cannot reforest itself naturally. It is proposed to continue this work on a large scale each year until all National Forest land is in productive condition.

During the past summer a survey has been made of the Sierra, Sequoia, Tahoe, Lassen, Plumas, and Klamath National forests by an entomological expert with a practical knowledge of forestry, with the object of determining the extent of the damage done in any forests by insects and recommending practical measures for abating this damage. Several dangerous infestations threatening large forest areas have been discovered and experiments are now under way to determine the cheapest and most effective treatment of infested trees. This work will be continued next year, emphasizing the education of rangers in this line of work by furnishing them with simple descriptions of the most dangerous insect enemies of trees, their method of work and the best means of destroying them. T. D. W.

PROTECTING WOOD AGAINST MARINE-BORERS.

The Forest Service has lately attacked a problem the solution of which will be of great value all over the world wherever timber structures of any kind are built in salt water. The problem, briefly, consists in determining some means of efficiently protecting such structures against the attacks of the marine-borers.

The marine-borers are forms of sea life which attack all kinds of wood exposed in sea water. They thrive in salt and brackish water all over the world, and every year destroy millions of dollars worth of piling and other timbers. In some places, notably on our Gulf Coast, their attacks are so destructive that a pine pile will be unserviceable after an immersion of thirty days. Even on the Pacific Coast their attacks are terrific,—eucalyptus sheet piling being riddled in eight months in San Francisco Bay. That the drain upon the pockets of wharf users and managers is great may be judged from the fact that in 1909 over 6,500,000 lineal feet of piling were creosoted in the United States alone; this is aside from the timbers used in an untreated condition, and those protected by patented preservatives.

As a preliminary step in the solution of this problem the Forest Service has placed in the waters of San Francisco and San Diego Bays some 250 experimental piles of various wood species. Some are protected by creosote, others by patent preservatives, and the remainder are left untreated. The piles will be inspected at regular intervals until all are destroyed by the marine-borers. From this test the most resistant species of timber, or the best artificial protection, will be determined.

The Forest Service realizes, however, that such a test will give but a temporary solution of the problem, and it is seriously considering both a study of the borers and of pile preservatives in general. If the problem is solved it will mean a saving of millions of dollars annually.

CALIFORNIANS IN THE FOREST SERVICE.

A recent examination of the records in the office of the District Forester, at San Francisco, shows a surprising predominance of Californians in the field force of this District. There are now nineteen National Forests in California, each of them in charge of a Forest Supervisor and his deputy, assisted by ten to thirty rangers and guards as well as one or two forest assistants. These are the men on the ground, dealing directly with the people. Thirteen of the Supervisors are Californians. The remaining six are men originally appointed to positions in the Service from other States.

Out of fourteen Deputy Supervisors, or the men next in rank, ten are Californians, one is a native of an Eastern State, and three are from Rocky Mountain and other Western States. With a total summer force of 360 rangers and guards, taking care of the 28,000,000 acres of forest area within this District, 344 were appointed from California, two from the Eastern States, and fourteen were transferred or appointed from other Western States. Most of the transfers mentioned were made when the organization of the Service was begun in this State, and were for the purpose of filling vacancies where experienced forest officers were needed.

WOOD-USING INDUSTRIES. In co-operation with the State Board of Forestry, the Forest Service is making a statistical study of the wood-using industries in California. In this study the following information concerning each industry is being collected: (a) Products manufactured and field of trade; (b) Kinds of wood used in the manufacture of each product; (c) Approximate amount used annually; (d) Approximate cost f. o. b. the factory; (e) Source of the raw material (whether produced in or out of the State); (f) Form in which the raw material is required at the factory; (g) Grades of material desired for the different uses; (h) Smallest size of each class of material which can profitably be purchased. This information will be compiled into a full and concise report and will be published as a State bulletin.

An investigation of this character will be of value in a number of ways: To the State it will be of considerable assistance in forming an intelligent forest policy and in presenting the advantages the State offers to wood-using industries to locate in it; the timber owner and even the rancher who has a few scattered trees to sell can learn from this report where a market can be found; to the saw-mill operator it may suggest a use for wood which he previously considered of little commercial value; to the manufacturer who is under the necessity of looking beyond his own State for all or part of the lumber needed, it will furnish a source of fairly accurate information concerning a region most likely to supply his needs; the merchants throughout the country who handle wood products can study to advantage the report of what California has to sell or wishes to buy; for people at large it has a statistical value and gives much general information; it gives valuable information concerning the forms, uses, and grades in which the factories desire lumber and also the woods most suitable for particular purposes.

Cards are being sent out indicating the information desired from the various factories. Reports from individual firms will,

of course, be considered confidential and will not be combined in the complete report in such a way as to reveal their identity. A copy of the published report will be sent to all reporting firms. Only reporting firms will be included in the directory.

GRAZING IN THE NATIONAL FORESTS OF DISTRICT 5.

The Secretary of Agriculture has authorized the grazing in the National Forests of District 5 for the grazing season of 1911 under paid permits, 206,750 cattle and horses, 10,575 swine and 474,870 sheep and goats. There are nineteen National Forests in the District, comprising a total area of approximately 28,000,000 acres, including private lands. Horses, cattle, and swine are allowed on all the forests, while sheep and goats are permitted in varying numbers on all but the Sierra, Angeles, and the Sequoia. The forests at present providing the most sheep grazing are the Plumas, California, Mono, Tahoe, and Lassen, each accommodating above 50,000 head. The Modoc National Forest at present supplies the most grazing for cattle and horses, with the Shasta and Kern ranking second and third.

The grazing season for the year usually begins in April or May, depending on local conditions. The larger percentage of stock occupy the National Forests during the summer season only, although year-long permits are issued where the circumstances justify, or when the stock owners depend upon the forest grazing-land during the entire year.

The questions of range improvement, reseeding, etc., come in for study and investigation, and during the last year numerous experiments have been started, the object of which will be to determine the practicability of introducing tame grasses on lands best suited to grazing. The effect of grazing upon natural forest reproduction and its value as a measure of protection from the spread of forest fires are big items also demanding the attention of the Service.

BOOK REVIEWS

EDITED BY MARION RANDALL PARSONS.

"MY FIRST SUMMER IN THE SIERRA." The January, 1911, number of the *Atlantic Monthly* has as its leading article the opening chapters of Mr. Muir's forthcoming book, "My First Summer in the Sierra." For forty years this journal of a mountaineer's first introduction to the mountain world has lain fallow to be given forth now enriched by the wealth of his wider experience and yet with all the joyousness and charm of his fresh outlook and youthful enthusiasm. Lovers of Mr. Muir's work will anxiously await the ensuing numbers and think themselves fortunate in thus being able to become acquainted with portions of a book which, in the opinion of those who have seen the advance sheets, is a masterpiece. M. R. P.

"THE SILVA OF CALIFORNIA." A volume of uncommon interest to members of the Sierra Club reached us as we were on the point of going to press. This is the long expected "Silva of California,"* by Professor Willis Lynn Jepson, of the University of California. It is published as the second volume of the "Memoirs of the University." Counting its generous margins the book is of more than quarto dimensions, has 480 pages, 85 handsome full-page plates, and three large folding maps. We regret that there is not time to give it a more exhaustive review with reference to its scientific merits. But we do not think that any one will doubt Professor Jepson's scientific equipment for the task he has completed in this volume. He is easily the foremost authority on the flora and silva of California, and his work represents nineteen years of careful study in the field in all parts of California. These first-hand studies have been supplemented by a survey of extant literature on the silva of California, beginning with the Malaspina and Vancouver expeditions down to the present time; also, by comparison with early type specimens of the California flora preserved in the leading European herbaria.

A feature of special interest to our Club members is the author's discussion of the geographical distribution of California

* *The Silva of California.* By WILLIS LYNN JEPSON. *Memoirs of the University of California,* Vol. II. The University Press, Publishers, Berkeley, Cal. 1910. Pp. 1-480, plates 1-85, maps 1-3. Price, unbound, $9.00; bound, $10.00; express prepaid, $10.80. For sale by the University Press, Berkeley, and by Paul Elder & Co., San Francisco, Cal.

trees. The extent of California, its mountainous character, variations in climate and rainfall, and the uniqueness of a great part of its silva makes this a subject of peculiar interest. This is, in fact, the first time that the data bearing upon distribution have been brought together in a measure approaching completeness. The work of filling in details can now go on with greater assurance and accuracy.

There is a "Census of Trees of California," a discussion of the "Architectural Forms of Native Trees," and an interesting paragraph, with illustrations, on "Teratology in California Trees." The latter refers to abnormal forms. Many will turn with curiosity to Professor Jepson's discussion of the ages of California trees. Twenty-two different families are represented in the silva; of these the pine family alone numbers seventeen species. A careful technical description of each species is followed by a general description of its characteristics, distribution, uses, etc. The many beautiful photographs and drawings (most of the latter the work of the late Miss M. H. Smith), greatly enhance the value of the book. The beautiful large print, heavy paper, and wide margins do credit to the work of the University Press. We congratulate the author on its completion and hope it will find its way into many homes. W. F. B.

"AFRICAN GAME TRAILS." This book by Theodore Roosevelt is easily the most important book* of the year among records of hunting adventure. Indeed, I do not know of any book written within the last fifteen years that equals it in point of interest for the sportsman. The characterization of himself in the sub-title as a hunter-naturalist betrays a little sensitiveness to the criticism of those who have sought to classify him with mere animal butchers. There is no doubt that our strenuous ex-President enjoys hunting as hunting. It is equally clear, however, that he also pursues this sport as an ardent naturalist. To this fact the numerous excellent photographs as well as the text bear testimony. The first chapter, entitled "A Railroad Through the Pleistocene," gives an account of his progress toward the interior of Africa. Chapter III is devoted to an account of lion hunting on the Kapiti plains. Into it the writer has not only gathered his own thrilling adventures with the king of beasts, but also those of some of his friends. He is a vivid narrator, and no one is likely to find interest flagging when he once gets under the spell of his word. In one of the

* *African Game Trails.* By THEODORE ROOSEVELT. With illustrations from photographs by Kermit Roosevelt and other members of the expedition, and from drawings by Philip R. Goodwin. Published by Charles Scribner's Sons, New York, 1910. Price, $4.00 net.

chapters Mr. Roosevelt has described a thrilling battle with a lion and some native spearmen. These spearmen belong to a warlike pastoral tribe called Nandi. They have long been accustomed to kill lions with spears, and one of these hunts was arranged for the benefit of Mr. Roosevelt. Nothing seems better fitted to give an idea of the adventures narrated by the author than the following description of the Nandis' battle with a lion:—

"One by one the spearmen came up, at a run, and gradually began to form a ring round him. Each, when he came near enough, crouched behind his shield, his spear in his right hand, his fierce, eager face peering over the shield rim. As man followed man, the lion rose to his feet. His mane bristled, his tail lashed, he held his head low, the upper lip now drooping, now drawn up so as to show the gleam of the long fangs. He faced first one way and then another, and never ceased to utter his murderous grunting roars. It was a wild sight; the ring of spearmen, intent, silent, bent on blood, and in the center the great man-killing beast, his thunderous wrath growing ever more dangerous.

"At last the tense ring was complete, and the spearman rose and closed in. The lion looked quickly from side to side, saw where the line was thinnest, and charged at his topmost speed. The crowded moment began. With shields held steady and quivering spears held poised, the men in front braced themselves for the rush and the shock; and from either hand the warriors sprang forward to take their foe in flank. Bounding ahead of his fellows, the leader reached throwing distance; the long spear flickered and plunged. As the lion felt the wound he half turned, and then flung himself on the man in front. The warrior then threw his spear; it drove deep into the life, for, entering at one shoulder, it came out of the opposite flank near the thigh, a yard of steel through the big body. Rearing, the lion struck the man, bearing down the shield, his back arched; and for a moment he slaked his fury with fang and talon. But in the instant I saw another spear driven clear through his body from side to side; and as the lion turned again the bright spear blades darting toward him were flashes of white flame. The end had come. He seized another man, who stabbed him, and wrenched loose. As he fell he gripped a spear head in his jaws with such tremendous force that he bent it double. Then the warriors were round and over him, stabbing and shouting, wild with furious exultation."

Similar adventures are narrated in the chapter entitled "Elephant Hunting on Mount Kenia."

The book is profusely illustrated with excellent photographs by Kermit Roosevelt and other members of the expedition. The

publishers have produced a fine volume with readable print and generous margins. Into the appendices has been gathered a variety of bibliographical and scientific information that will prove of great interest and value to naturalists. We commend the book unreservedly. W. F. B.

"ROMANTIC CALIFORNIA." It is refreshing to find, among the volumes dealing with California in its more picturesque phases, a book whose author does not limit his subject-matter to the well-worn theme of the missions. In "Romantic California,"* Mr. Ernest Peixotto has devoted interesting chapters to "Italy in California" and "The Farallones," and has drawn wonderful pictures with both pen and pencil of the ghostly cypress groves of Monterey and the stately redwoods of Bohemia's forest. Those of us who have enjoyed the Sierra Club's weekly tramps about the bay region will be especially interested in the chapters called "Little Journeys from San Francisco," which include descriptions of the peninsula, the region of Tamalpais, and the Piedmont Hills. We cannot but regret, however, that Mr. Peixotto did not devote more than the one brief chapter to the mountain world, the more so as he upholds our belief that the Sierra Nevada is destined to become one of the great playgrounds of the world. "Colorado and the Rockies have become known as summer resorts. The Sierras will have their turn later. And when their advantages and their beauty are fully realized, and they are provided with the large hotels that the tourist crowd seems to demand, they will surely take their place among the great mountain resorts of the world. In the mean time, they retain a certain primitive charm that the Alps have long since lost and that those of us who love them best will be loath indeed to see disappear.

"They differ in many ways from other mountains. In the first place they share, with the rest of California, in a perfectly rainless summer. When I think of the dismal days that one often encounters in the Alps, with the snow-peaks shrouded for days in impenetrable clouds, while heavy vapors rise like ghosts from the moist valleys below, or recall the torrential rains of the Black Forest, I cannot but contrast these blighting conditions with the perpetual blue sky, the brilliant clear sunshine, the dry but cool resinous air of the Sierras."

Mr. Peixotto's drawings alone would place this book in the foremost rank of the out-of-door books of the season. M. R. P.

**Romantic California.* By ERNEST PEIXOTTO. Charles Scribner's Sons, New York, 1910. 219 pages; illustrations by the author. Price, $2.50.

"THE GATEWAY TO THE SAHARA." This volume,* published last year and accidentally overlooked by the reviewer, is likely to gain an added interest to-day when any book relating to the popular theme of Africa gains immediate attention. But Mr. Furlong's "Gateway to the Sahara" needs no such adventitious stimulus to bring it before the reading public. It is a series of vivid and brilliant pictures of the life of Tripoli to-day in oasis, desert, and coast town, the more pleasing in that the author with a restraint no less admirable than rare has in great measure avoided comment, deduction, or generalization, but, placing the results of his observations and experiences clearly before us, has given us the simple facts for what they are worth. The presentation of much of his material in narrative form, as in the case of the story of Salam, a Hausa slave, not only adds a lightness and variety to his style, but lends to the whole volume the stamp of authenticity. Mr. Furlong gives us characters, not types, and lets them speak for themselves. The book is startling in its revelation of conditions in existence to-day which we are wont to consider as belonging altogether to the past. The appalling pictures of slavery, the story of the forgotten prisoner, entombed for half a lifetime for nobody knew what, who cut his way from his dungeon into the open street, the accounts of the raids of the "Masked Tuaregs," a nation one ventures to believe not one American in a hundred has ever heard of, but which is said to be "master of a territory half the area of the United States in extent,"—all savor more of the Middle Ages than of the twentieth century. No less engrossing are the desert incidents and experiences with their pictures of the caravan trade. In his pursuit of information and photographs Mr. Furlong was more than once placed in close proximity with thieves and even in jeopardy of his life. The photographs secured under such exciting conditions are supplemented by drawings, many of them printed in colors. The book has a permanent value and is of more than passing interest, for it depicts a life that "nowhere in Northern Africa . . . can be found more native and typical than in Tripolitania. How long before the primitive customs of this people will give way before the progressive aggression of some Christian power, and the picture of an ancient patriarchal life be tarnished with the cheap veneer of a commercial vanguard, may be answered any morning by the cable news of the daily paper. The great dynamic forces of modern civilization cause events to march with astounding swiftness. Tripoli, in Barbary, is already in the eye of Europe; to-morrow the Tripoli of to-day may have vanished."

M. R. P.

**The Gateway to the Sahara.* By CHARLES WELLINGTON FURLONG, F. R. G. S. Charles Scribner's Sons, New York, 1909. 306 pages, with illustrations by the author from paintings in color, drawings in black and white, and photographs. Price $2.50 net.

"TRAILS THROUGH WESTERN WOODS."

Those who read in the last June BULLETIN the story of the setting apart of the Glacier National Park will be interested in "Trails Through Western Woods"* by Helen Fitzgerald Sanders. This San Francisco girl has described with considerable skill the languorous beauty of the northern lakes and woods in summertime. In the chapters entitled "Enchanted Waters," "Lake Angus McDonald," and "Above the Clouds" admirable word pictures will be found of this little-known region of northern Montana. The Indian legends, too, and the account of the Indian Missions of the Northwest are deserving of attention, as the author had unusual opportunities, during a protracted stay at the Flathead Reservation, of becoming familiar with the Indian myths and traditions. The lore relating to the buffalo is particularly interesting. The book is admirably written and is well illustrated with photographs.

M. R. P.

"A VOICE FROM THE CONGO."†

The dark continent, as it was characterized by the man who did most to make its hidden places light, claims an unusual share of attention this season. "A Voice from the Congo," by Herbert Ward, a member of the Stanley expedition for the relief of Emin Pasha, recalls by its anecdotes of Dr. Livingstone, Stanley, and Tippo Tib, the sensation made years ago by the record of that expedition. Since that time much has been written concerning Africa, but the reviewer recalls no previous work treating the subject from quite Mr. Ward's viewpoint. The Congo tribes, their characteristics, customs, superstitions, even their horrible cannibalistic tendencies are freely portrayed, not from the standpoint of a traveler or that of a sportsman, but from that of a man who has lived among them and grown to know their better qualities and the lines along which they may be expected to develop. Except in touching upon conditions relating to the Arab slave raiders Mr. Ward ignores the political situation. "There are two sides," he says, "to the subject of Congo affairs: the political side, which has been dealt with so ably by honest, fearless men, who have sought to ameliorate the conditions of a persecuted race. The second side, it appears to me, should relate to the race in question—their nature, their habits and customs, and their personality. If the perusal of the foregoing pages serves to call forth a feeling of interest and sympathy for my African friends, I shall be more than content."

M. R. P.

**Trails Through Western Woods.* By HELEN FITZGERALD SANDERS. Alice Harriman Company, New York and Seattle, 1910. 311 pages, illustrated from photographs by the author. Price, $2.00 net.

†*A Voice From the Congo.* By HERBERT WARD, New York. Chas. Scribner's Sons, 1910. With illustrations from photographs, sculpture and drawings by the author; 330 pages. Price, $2.50.

"THE MOUNTAIN THAT WAS GOD."* An apotheosis of Mt. Rainier so compelling that we, too, would fain fall down and worship, must prove the author's power over his reader. In addition to the written word there is a wealth of pictures showing the mountain in every possible mood and from every available point of view. Of this publication Mr. John Muir says: "A magnificent mountain book. I never saw finer illustrations, or so many crowded together, like the trees and flowers at the feet of the glaciers. The glorious mountain is indebted to you and so is every mountaineer."

The love of his subject so fills the author's being that he enthusiastically carries us with him from the old Indian legends of mountain worship down to the more prosaic but no less interesting explorations of the present day. He then follows up these glowing descriptions by practical, tabulated information as to routes, guides, equipment and expenditure necessary to reach his Mecca.

Nor are the scientific interests forgotten; witness the chapters on the geological history and the botanical wealth of the Mt. Rainier region. The reading of this book makes one desire to sell all that he has and start at once on a pilgrimage to the "Big Snow" Mountain. H. M. LEC.

"THE MOUNTAINEER."† "My best wishes go with those who climb the hills and scale the peaks of our own wonderful land. The finest of all mountaineering is the making of trails that others can follow to the heights." These words close a greeting from Henry Van Dyke that ushers in Volume III of "The Mountaineer." Particularly noteworthy among the many interesting articles are Mr. E. W. Harnden's "A New Mountain Country," and Miss Lulie Nettleton's account of the Mountaineer Outing to Glacier Peak. Photographs by Harnden, Curtis, and Lindsley deserve special mention, as do the papers on bird and plant life. M. R. P.

"CLIMBING RAINIER AND HOOD."‡ In the July, 1910, issue of *Outdoor Life* there is an interesting account by Miss Edna Cadwalader of the Sierra Club's expedition to Mt. Hood and Mt. Rainier during the summer of 1905 that is well worth reading. Those of us who participated in that outing will particularly enjoy the entertaining accounts of the unusual

**The Mountain That Was God.* By JOHN H. WILLIAMS, Tacoma, Wash. Illustrated with maps and 140 views of Mt. Rainier; 111 pages. Price, paper, $0.50; Library edition, in boards, $1.00.

†*The Mountaineer,* Vol. III, Cascade Number, November, 1910. Published by The Mountaineers, Seattle Washington.

‡*Climbing Rainier and Hood.* By EDNA CADWALADER. *Outdoor Life,* July, 1910. Outdoor Life Publishing Co., Denver, Colorado. Price, 15 cents.

features and experiences of the snow mountain climbs that made that northern outing one of the most pleasurable we have ever held. Miss Cadwalader was one of the few women of our Club who made the three ascents of Hood, Rainier, and Shasta that summer. The article is well illustrated. M. R. P.

"THE CANADIAN ALPINE JOURNAL."* This annual publication of the Canadian Alpine Club continues to hold its high standard of excellence. The 1910 issue, recently received, contains the various articles and photographs relating to the Club Outing of 1909. Mt. Robson, an interesting account of whose first ascent was contained in the July, 1910, *Appalachia*, forms the theme of three articles, and there are stories of two other first ascents—"The North Tower of Mt. Goodsir" and the "First Traverse of Mt. Victoria." Papers on "An Adventure With an Eruption of Mt. Pelee," "On Mt. Hood," and "With the Scottish Mountaineering Club at Easter" mark the growth and expansion of the club's interests, which have heretofore seemed national only in character. Among the lighter articles "A Graduating Climb" can be heartily recommended to every participant in a mountaineering club's outing, as a more amusing account of the tenderfoot attitude has never been published. As usual the illustrations are remarkably fine. M. R. P.

"THE MID-PACIFIC MAGAZINE."† The initial number of this magazine comes to us in attractive cover and with no less attractive contents. Among the many outing articles the one entitled "The Trail and Mountain Club," by Guy H. Tuttle, brings us in touch with the activities of a new group of nature lovers. The article tells not only of the organization of a mountain club in Honolulu, but also gives details of the several trails and rest houses which have already been opened, and in addition there is much work in progress and on a very generous scale. When we remember that shelter from the torrential rains of the tropics is very necessary, these houses are an important item in a scheme for outings. "The Hawaiian Trail and Mountain Club" further proposes to issue trail maps of each island in the group, and to publish pamphlets giving information about them. A trail chopped through a forest of matted tree-ferns and interlacing creepers is a most invaluable aid to enthusiastic explorers. The reviewer once on a time tried to climb the wall of the Iao Valley, ascending through the untouched forest, and thus more heartily endorses the work of this new club. Long may it prosper. H. M. LEC.

**The Canadian Alpine Journal*, Vol. II, No. 2. The Alpine Club of Canada, 1910. 229 pages. Price, $1.00.

†*The Mid-Pacific Magazine*, January, 1911, Vol. I, No. 1. Honolulu, T. H. Conducted by Alexander Hume Ford. Price, 15 cents.